USER MANUAL

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Xfly2

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Your comments will help us improve the quality of the user documentation. Do not hesitate to send improvement requests, or report any error or inaccuracy on this user manual by e-mail to doc@evs.com.

Regional Contacts

The address and phone number of the EVS headquarters are usually mentioned in the Help > About menu in the user interface.

You will find the full list of addresses and phone numbers of local offices either at the end of this user manual (for manuals on hardware products) or at the following page on the EVS website: http://www.evs.com/contacts.

User Manuals on EVS Website

The latest version of the user manual, if any, and other user manuals on EVS products can be found on the EVS download center, on the following webpage: http://www.evs.com/downloadcenter.

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Safety Warning

In order to avoid injury to oneself, please heed the following instructions.

The following indications explain the degree of physical danger possible by ignoring the proper usage directions.

	WARNING	This symbol and waning is used to indicate sections that may result in a serious injury or even death.
	CAUTION	This symbol and caution is used to indicate sections that only pose a risk of minor injury or physical damage.

The various types of warning symbols are listed in the following picture.

	This symbol means that you should pay extra caution.
	This symbol indicates something you absolutely must not do.
	This symbol indicates something you must do.

1. Outline

1.1. Features

- Support up to 5 hot-swap SATA HDD (Hard Disk Drive)
- Support different RAID modes including RAID 6, RAID 5, RAID 3, RAID 1, RAID 0, RAID10
- Dual Host Interface: eSATA3 (6Gbps) and USB 3.0 (5Gbps)
- Original FPGA RAID 6 Engine with real time parity generation and high speed DMA switching
- Spot error recovery greatly reduces HDD error and rebuild probability
- Automatic Rebuild at adjustable Rebuild Rate
- Maintain same performance upon drive failure and little impact at recovery (RAID 3, 5, 6)
- LCD and keypad operation for status monitoring and system configuration
- Web GUI status monitoring and system configuration

1.2. Functions

Main Functions

- Two independent or single LUN support for eSATA3 and USB
- Configurable write cache mode
- Configurable verify mode
- Data read ahead size
- Write retry mode
- Buffer segment size adjustment
- Starting time of retry
- Sequential list size
- Time out interval for low speed drive detection
- Power on standby time
- Drive ready waiting time
- Cache memory check interval
- HDD patrol time and mode

Auxiliary Functions

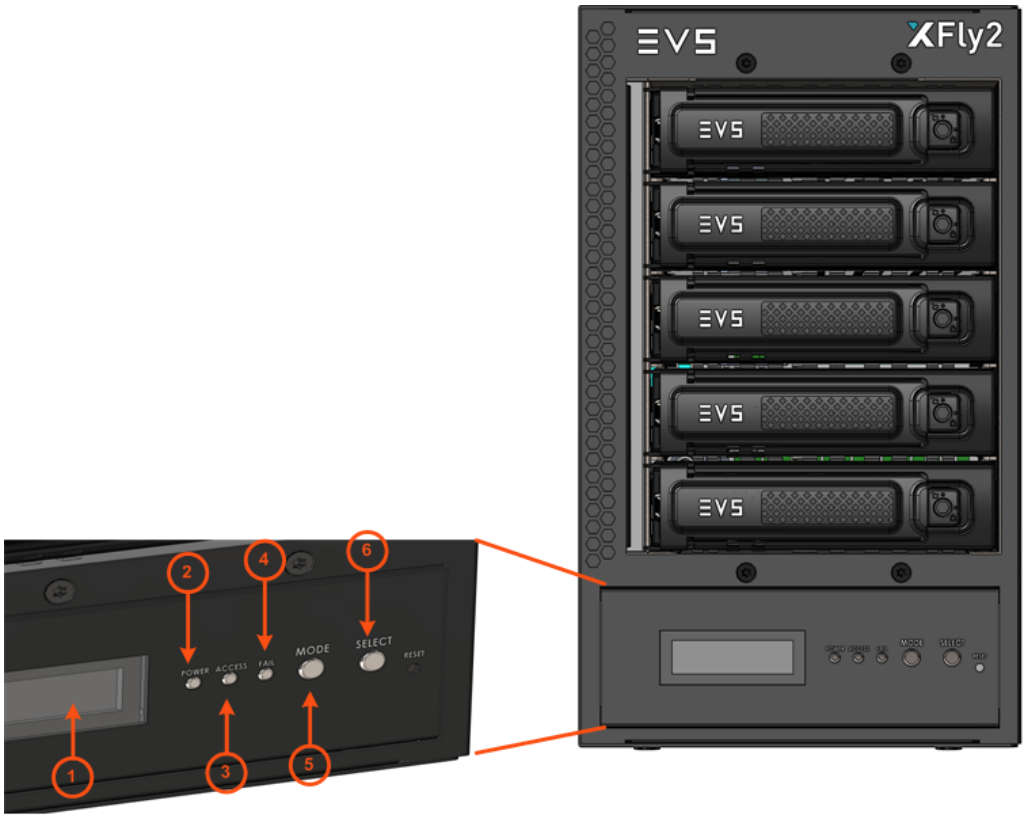
- Performance (Data Transfer Speed) display on LCD
- Event display on LCD
- Email notification support
- Web-based status monitor
- SNMP notification

1.3. Packing Contents

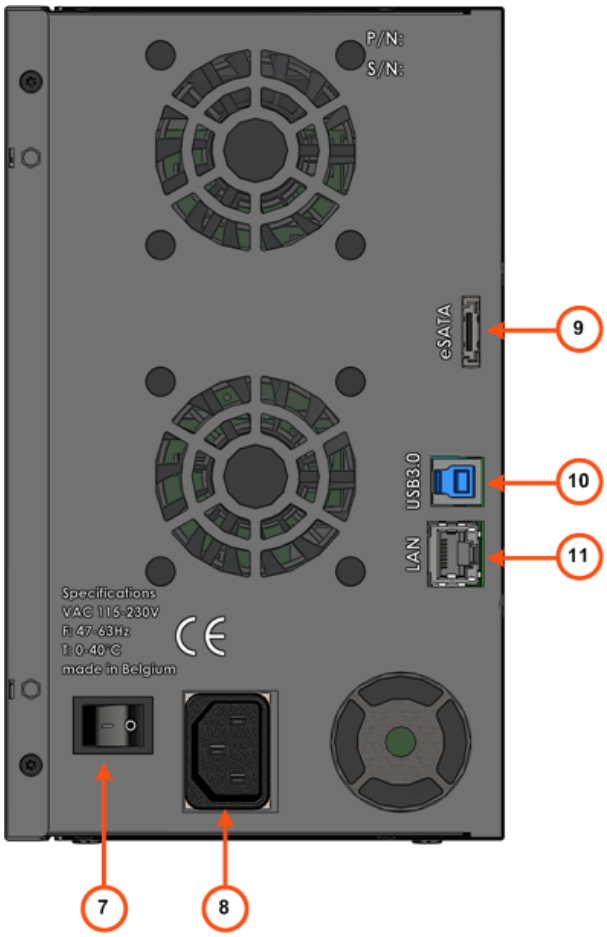
- XFly2: storage system
- AC power cord
- USB3 cable: 1 meter USB-IF certified
- eSATA cable: 1 meter eSATA cable

1.4. Hardware Components

Front View



Rear View



Area	Name	Description
1.	LCD display	Message display screen. Shows the status of the system and the parameters during configuration.
2.	Power LED	Power ON LED indicator
3.	Access LED	Host Access LED indicator
4.	Fail LED	Controller error LED indicator
5.	Mode button	1. Parameter initialization (Power up initialization) 2. Parameters configuration (See section "Setup and Monitoring" on page 5. 3. Stop alarm buzzer (Buzzer stops immediately by pushing once)
6.	Select button	Setup parameters.
7.	Power switch	Power up/down switch
8.	Power input	AC inlet
9.	eSATA3 connector	eSATA host connector

Area	Name	Description
10.	USB3 connector	USB3 host connector
11.	Ethernet port	RJ45 Fast Ethernet port for Web GUI management

Both eSATA and USB3 cannot be applied to same LUN at the same time. For simultatneous usage of eSATA and USB3, two LUN mapping and SWAP mode should be configured.

1.5. Connection

eSATA or USB 3 → Host Computer

1. Connect eSATA cable or USB3 cable from host to the system (included in the package)
2. To use web-based GUI, connect the Ethernet cable between LAN connector and host

2. Setup and Monitoring

2.1. LCD Front Panel Monitoring and Setup

2.1.1. Setup Overview

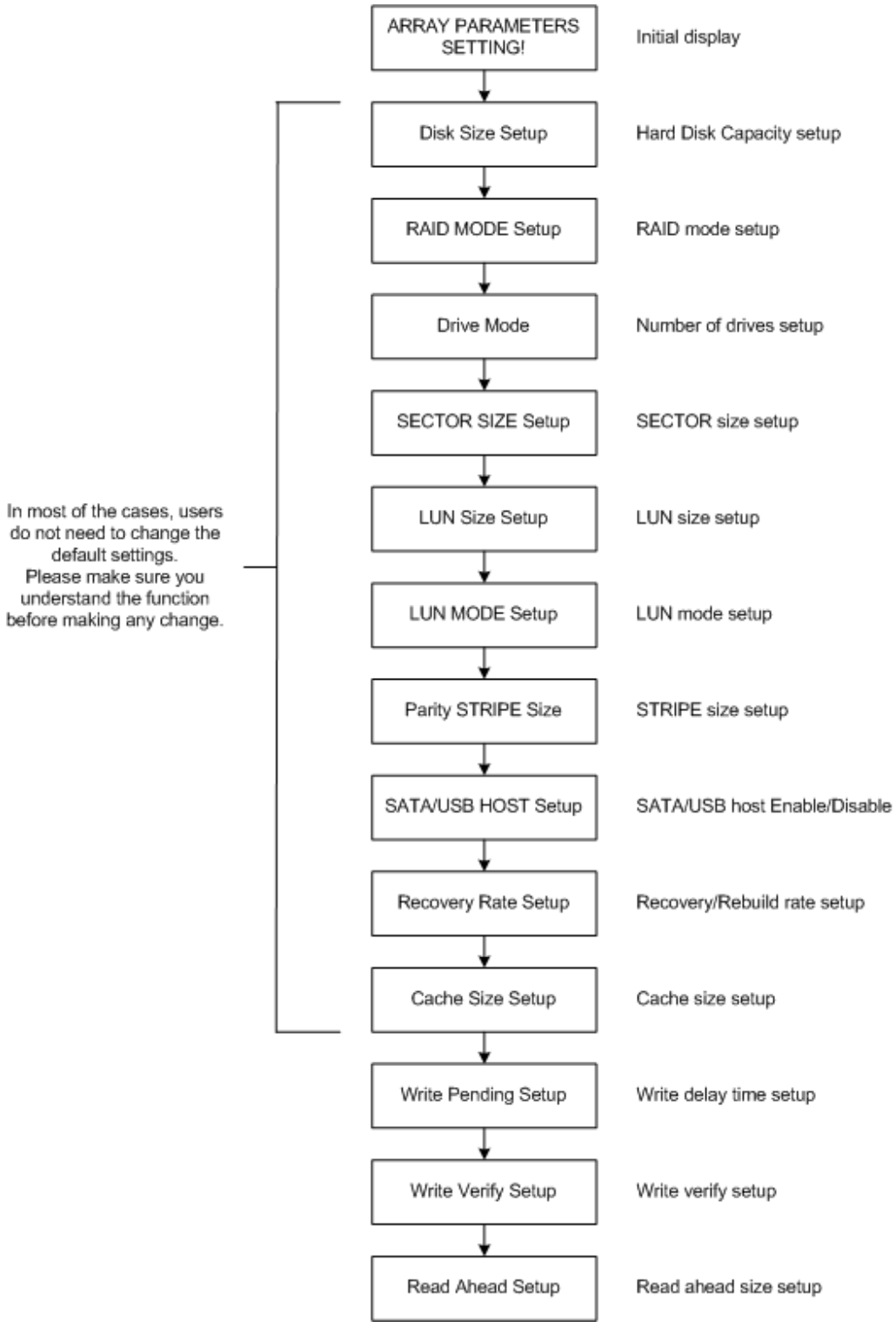
To simplify the setup process, XFly2 is designed to support all the setup options from the LCD screen and buttons on the front panel.

The factory RAID level is RAID5 for highest reliability. To prevent malfunction, parameters cannot be changed from normal operation mode. Critical parameters include number of drives, capacity and RAID mode. They should be set up before you start to work with the unit.

2.1.2. Setting RAID Operational Parameters

LCD Toggle Rolling Setup Flowchart

This section shows all the settings which follow one another on the LCD display during the setup process.


ARRAY PARAMETERS SETTING!
Initial display
Disk Size Setup
Hard Disk Capacity setup
RAID MODE Setup
RAID mode setup
Drive Mode
Number of drives setup
SECTOR SIZE Setup
SECTOR size setup
LUN Size Setup
LUN size setup
LUN MODE Setup
LUN mode setup
Parity STRIPE Size
STRIPE size setup
SATA/USB HOST Setup
SATA/USB host Enable/Disable
Recovery Rate Setup
Recovery/Rebuild rate setup
Cache Size Setup
Cache size setup
Write Pending Setup
Write delay time setup
Write Verify Setup
Write verify setup
Read Ahead Setup
Read ahead size setup
In most of the cases, users do not need to change the default settings.
Please make sure you understand the function before making any change.

How to Set RAID Operational Parameters

The modification of parameters can be done from the Parameters Setup mode.

1. Press and hold both the **MODE** button and the **SELECT** button while powering up.

   The LCD shows the message indicating that the system enters the Parameters Setup mode:

ARRAY PARAMETERS SETTING !

2. Press the **MODE** button to roll among the RAID operational parameters and find the one you want to modify.

   The LCD shows the next parameter item.

3. To modify the parameter displayed on screen, press the **SELECT** button.

4. Save your change by pressing both the **MODE** button and the **SELECT** button.

   The selected parameters will be written to internal non-volatile memory.

   The LCD shows the following message:

POWER DOWN PLEASE !

   To cancel the change, power down before saving to memory. The settings will be reverted to the values they had upon the last save.

5. Reboot the system or press the **SELECT** button for 3 seconds to make new parameters effective.

Warning
It is mandatory to initialize the controller based on configured parameters. To do so, hold down the **MODE** button while powering up.
This action will force failed drive or rebuilding status to become "Normal". If it is not performed, the system will raise an alarm and some disks will be identified as bad.
Please DO NOT do this if your system was in degraded mode, and need to be recovered.

After powering up, the LCD should show its RAID mode and Normal status:

RAID-5 NORMAL

RAID Operational Parameters

Introduction

This section explains each RAID parameter and the associated function of the XFly2 system.

See section "Factory and Default Settings" on page 24 for default and factory parameter values.

Note
It is recommended to write a memo if you change parameters from their factory values. Factory setting is always recommended unless there is special requirement for the change.

Disk Size Setup

The LCD shows

DISK Size xxB

This parameter is used to specify the capacity of the drive you want to use. The size will be applied to all drives.

Usually the system was configured with exact drive size of inserted disks. You should not change the drive size unless you want to reconfigure and change it.

Parameter	Function	Memo
Test 1GB	Set DISK size to 1GB (Test only)	
120GB, 160GB, 250GB, 400GB, 500GB, 750GB, 1TB, **2TB**, 3TB, **4TB**, 5TB, 6TB, 7TB, 8TB	Set DISK size to the selected value. **Warning** EVS qualified disks are 2TB and 4TB. Performance is not ensured with other disks.	

	CAUTION	**Please do not change the factory setting.** If actual drive size was smaller than setup value, error such as **ONE DOWN L**, **SYSTEM DOWN L** might happen and buzzer will be fired.

RAID Mode Setup

The LCD shows

RAID MODE RAID-5

This parameter is used for RAID mode selection.

Supported RAID modes are:

RAID 6, RAID 5, RAID 3, RAID 1, RAID 0, RAID 1 Three Drive, RAID 10, Single Drive.

RAID 1 Three Drive means that the same data is written to three drives and data might be read from any drive.

RAID10 works as a pair of 'Drive 0,1' 'Drive 2,3', 'Drive 4,5', etc.

Drive Mode Setup

The LCD shows

DRIVE MODE 5

This parameter is used to set the number of drives in use.

Parameter	Function	Memo
DRIVE MODE 3	3 Disks (DATA＋PARITY) Mode	
DRIVE MODE 4	4 Disks DATA＋PARITY Mode	
DRIVE MODE 5	5 Disks DATA＋PARITY Mode	EVS factory value
DRIVE MODE 6	6 Disks DATA＋PARITY Mode	Not applicable
DRIVE MODE 7		Not applicable
DRIVE MODE 8		Not applicable
DRIVE MODE 9		Not applicable
DRIVE MODE 10		Not applicable

Sector Size Setup

The LCD shows

SECTOR SIZE 512B

This parameter is used to set the sector size of disk. For new Advanced Format HDD, you need to set up 4KB for better performance on sequential Write access.

LUN Size Setup

The LCD shows

LUN SIZE
FULL

Parameter	Function	Memo
LUN SIZE FULL	Configures all capacities to Single LUN size. Depends on host Operating System, LUN over 2TB size might not be recognized.	EVS factory value
LUN SIZE MAX 2TB	One LUN only and size is set to 2TB as some Operating Systems only support less than 2TB LUN size.	
LUN SIZE 1/2 DIVISION	Two LUNs, each will be assigned half of total capacity.	
LUN SIZE 64GB + ALL 64GB + Max2TB	Sets up one LUN as 64GB and • the rest of all as 2nd LUN • or 2nd LUN maximum is 2TB.	
LUN SIZE 256GB + ALL 1TB + ALL 2TB + ALL	Sets up one LUN as 256GB, 1TB or 2TB and the rest of all capacities as 2nd LUN.	

For LUN mapping to host port, please refer to LUN MODE parameter for details.

LUN Mode Setup

The LCD shows

LUN DIRECT
No BIAS

Parameter	Function	Memo
LUN DIRECT No BIAS	LUN Direct: Both eSATA and USB3 hosts will be mapped to first LUN.	Default
LUN SWAPPED No BIAS	LUN SWAPPED: first host will be mapped to eSATA and 2nd LUN will be mapped to USB3.	
LUN DIRECT for MBR(-1)	[1]Please refer to below explanation	

Parameter	Function	Memo
LUN SWAPPED for MBR(-1)	[1]Please refer to below explanation	
LUN SWAPPED for MBR(+1)	[1]Please refer to below explanation	

[1] Sector management of RAID differs between [NO BIAS] and [for MBR(-1) or (+1)].

Depending on host OS used, the beginning sector address of disk partition is different and the setting might affect the performance. The setting should not be changed during operation and disk format is necessary if changed. Please refer to MBR related information in Appendix A.

Parity Stripe Width Setup

The LCD shows

PARITY STRIPE
2MB/DRIVE

This parameter is used to choose stripe width of RAID-5/6 LUN.

Parameter	Function	Memo
PARITY STRIPE 2 MB/DRIVE 1MB/DRIVE 256KB/DRIVE 128KB/DRIVE	Setup stripe width of each drive channel. When the host issues a command, and the parity is to be written, the command is divided up into two or more operations. A relatively big stripe width is setup to reduce the overhead of continuous operation. The bigger size of stripe width, faster transfer speed can be achieved for sequential read or write. Usually [2MB/DRIVE] setup will give a good performance but it depends on the host application.	Default 2MB/DRIVE

Setup of e_SATA Host

The LCD shows

eSATA3 Host
Enabled

Parameter	Function	Memo
eSATA3 Host Enabled	Enables eSATA host channel	Default
eSATA3 Host Disabled	Disables eSATA host channel	

Setup of USB3 Host

The LCD shows

USB3 Host Enabled

Parameter	Function	Memo
USB3 Host Enabled	Enables USB3 host channel	EVS factory value
USB3 Host Disabled	Disables USB3 host channel	Default

Recovery Rate Setup

The LCD shows

RECOVER RATE 5Min./GB

Recovery (Rebuild) operations utilize free time between host data access without interrupting the current host application.

Therefore data read/write priority can be adjusted through different recovery rate setting.

User can choose the timing to execute recovery operations as described below.

Parameter	Function	Memo
RECOVER WAIT TIME 0 Sec	Recovery request will be processed immediately between host commands. Recovery will always be processed therefore host access will be slow down. Select this mode if you want the recovery have high priority.	
RECOVER WAIT TIME 0.1 Sec	Continuous host commands will be processed first. Recovery operation will be taken into account when the interval between host commands is longer than 0.1 sec. The next host command has to wait till one recovery task is completed except READ/WRITE or READ Cache command which will be executed immediately.	

Parameter	Function	Memo
RECOVER WAIT TIME 1 Sec	This can be used when host access are not concentrated. The wait interval following the last host command is 1 sec. On this mode, the recovery operation will not be processed if the host commands are continuous with less than 1 sec internal.	
RECOVER WAIT TIME 10 Sec	Usually this should not be used. Probably this mode can be applied if there is very little host access.	
RECOVER RATE 2Min./GB 5Min./GB 10Min./GB 20Min./GB	This is to assign the recovery time for 1GB capacity despite of interval to wait between host commands. There is possibility 1GB recovery cannot be completed within assigned interval.	Default 5Min./GB

Cache Size Setup

The LCD shows

CACHE SIZE
512MB

This parameter is only for DEBUG usage. Users should NOT alter this setting.

Parameter	Function	Memo
CACHE SIZE 64MB 128MB 256MB 512MB	**Cache Buffer Error** will be shown if the selected cache size does not match the installed cache memory.	Default 512MB

Write Cache Mode Setup

The LCD shows

WRITE ALL
PENDING 0.1Sec

The controller needs more time than writing to single drive to generate parity while doing RAID-3/5/6 WRITE. Therefore Write Cache is enabled in such situation.

This parameter defines the timing of flushing cache contents into disks.

Parameter	Function	Memo
WRITE MODE WAITING	Under this setting, the Write operation will not be acknowledged as "Completed" till data is written into disks. This means no caching is used during data write. The performance is slower compared to WRITE MODE PENDING mode. READ speed is not affected.	Write Through
WRITE MODE BUFFERED	Write command is acknowledged as "Completed" right after data is written into cache, and cached data starts to be moved into disks at the same time.	Write Back
WRITE MODE PENDING 0.1Sec	After caching the first host WRITE, the cache content will only be flushed into disk if there is more than 0.1 sec host idle or cache threshold is met. When doing sequential writes, cache will be filled by multiple write command and data can be written once to save total write time.	Default
WRITE MODE PENDING 1 Sec	Similar to PENDING 0.1 sec, the wait interval is one second.	

Verify Mode Setup

The LCD shows

VERIFY WAIT
READ aft WRITE

Verify Mode allows you to setup the action for ATA WRITE VERIFY command. **No Verify** will take **WRITE VERIFY** command as a simple WRITE without waiting verification to be completed.

Upon READ request after a WRITE command, **NO READ aft WRITE**, means to use cached content to respond a READ command after WRITE. **READ aft WRITE** means cache data was disgarded and controller has to read data from disk.

Parameter	Function	Memo
VERIFY WAIT Read aft Write	The **Write Verify** command cannot be completed at the time data is written into cache. It has to wait till verification is completed. The written data in cache will be discarded. The data will be read from the disk when a read request comes in.	Default
VERIFY NO READ aft WRT	The **Write Verify** command cannot be completed at the time data is written into cache. It has to wait till verification is completed and use the written data in cache for following READ command usage.	

Parameter	Function	Memo
NO VERIFY Read aft Write	The **Write Verify** command is treated as Write without verification. The written data in cache will be discarded. The data will be read from the disk when a read request comes in.	
NO VERIFY NO READ aft WRITE	The **Write Verify** command is treated as Write without verification and use the written data in cache for following READ command usage.	

Read Ahead Setup

The LCD shows

READ AHEAD
64KB

This parameter is used to set size of data to prefetch into cache for read operation.

Parameter	Function	Memo
READ AHEAD 0 KB	Does not do read ahead. You might like to use this setting if read data is frequenty changed across different directories.	
READ AHEAD 8 KB	The read ahead size is 8KB, i.e one page same as buffer segment size.This might be effective for general random operation.	
READ AHEAD 64 KB	This will read ahead multiple pages following the current one. This is effective for general sequential read.	Default
READ AHEAD 256 KB	Compared to 64KB, one more page or 256KB will be prefetched depend on page size. This is effective for sequentical access especially video data.	
READ AHEAD 1 MB	1MB or multiple page read ahead depend on page size. It will be effective if the data size is times of MBs.	
READ AHEAD 4 MB	4MB size read ahead. This might be effective if the application reads directly block data without through file system.	

2.1.3. Setting Product Information and Background Parameters

Introduction

IP address of GUI, fan speed control and other details for the system are called Background parameters in the contrast to RAID operational parameters described in section "RAID Operational Parameters" on page 8.

You can change these parameters from the LCD operation panel. See section "How to Set up Background Parameters" on page 16. Web UI is usually recommended for such action if accessible.

See section "Factory and Default Settings" on page 24 for default and factory parameter values.

Note
It is recommended to write a memo if you change parameters from their factory values. Factory setting is always recommended unless there is special requirement for the change.

How to Set up Background Parameters

Please make sure you understand exactly the purpose why you change the default parameters. Product information will be shown first while you go through background parameter settings.

1. Press and hold both the **MODE** button and the **SELECT** button while powering up to enter the Parameters Setup mode.

   The LCD displays:

ARRAY PARAMETERS SETTING !

2. Press the **SELECT** button.

   The LCD displays the firmware version:

Firmware is Ver. x.xxx

   The content can be rolled among by pressing the **MODE** button.

3. Press the **SELECT** button.

   The LCD displays the vendor ID:

Vendor ID is EVS

4. Press the **SELECT** button.

   The LCD displays the product ID:

Product ID is **XFLD-1S**

5. Press the **SELECT** button.

   The LCD displays the Serial number of XFly2:

Serial No ID **xxxxxxxx**

6. Press the **SELECT** button.

   The LCD indicates:

End of **Fixed Parameters**

7. Press the **MODE** button to enter the Background Parameters mode.

   You can also get into the Background Parameters mode by pressing the **MODE** button when one of the following items is displayed: Firmware Version, Vendor ID, Product ID, or Serial Number.

8. Press the **MODE** button to roll among the background parameters.
9. For some parameters, you will need to confirm the current setup by pressing both the **MODE** button and the **SELECT** button at the same time

Background Parameters

Press the **MODE** button to move from one item to the next one.

IP Address Setup

The LCD shows, for example,

IP Address **192.168.50.210**

Press the **SELECT** button to increase the IP address. The longer you hold the **SELECT** button, the faster the number is increased.

Note
The IP address has been set by EVS to a value such as 1.1.X.X, based on the XFly2 serial number. However, the default IP address is 192.168.50.210.

Address Mask Setup

The LCD shows, for example,

Address Mask **255.255.255.0**

Press the **SELECT** button to increase the address mask. The longer you hold the **SELECT** button, the faster the number is increased.

Parity Mode Setup

This parameter is used to enable or disable the cache memory parity. (Similar to ECC function).

The LCD shows

ENABLE PARITY

Possible values: **ENABLE**, **DISABLE**.

Maximum Negotiable Speed of Host Channels

The LCD shows

Host Rate 3Gb/s

Possible values: **3Gb/s**, **6Gb/s**.

Note
It is important to note that the XFly2 eSATA speed is not auto-negotiable. Most of eSATA rate of host computer is auto-negotiable, so this parameter has to be equal to or smaller than the eSATA rate of host computer.
It is set to 3 Gb/s by the EVS.

NCQ Mode

This parameter is used to set up NCQ (Native Command Queue) support.

The LCD shows

NCQ MODE READ Priority

Possible values are

- **No Queuing**: no queuing.

  Native Command Queuing supports usually have dependency on host Operating System and SATA drive. When any abnormal behavior is encountered, please set this parameter to NO Queueing. To support NCQ, host has to set up operating mode of connecting sata port as AHCI mode.
- **Read Priority**: NCQ ON, higher priority for READ command.
- **NO Reorder**: Queuing ON, command executed as first in first out.
- **NO Priority**: Queuing ON, command executed as possible re-order without special priority.

Maximum Negotiable Speed of Drive Channels

The LCD shows

Disk Speed 6Gb/s

Possible values: **3Gb/s**, **6Gb/s**.

Fan Speed Control Temperature

This parameter is used to set up temperature criteria for fan speed control.

The LCD shows

FAN SPEED TEMP 45 deg. C

Possible values: **20 deg. C**, **30 deg. C**, **40 deg. C**, **45 deg. C**, **50 deg. C**, **55 deg. C**, **60 deg. C**.

When the detected temperature (RAID Core chip) is higher than the FAN SPEED TEMP, the fan will be turned into high speed. XFly2 is shipped with 50 degrees set in advance.

Flush Cache Command Setup

The LCD shows

ENABLE FLUSH CACHE

Possible values: **ENABLE**, **IGNORE**.

Background Write Setup

This parameter is used to set up the size of data stored in cache for sequential write.

When data size written to cache is bigger than the setup size, data will be partitioned to parts.

The LCD shows

WRITE BACK MAX SIZE 2MB/CH

Possible values: **64KB**, **128KB**, **256KB**, **512KB**, **1MB**, **2MB**, **4MB**.

Write Retry Mode Setup

This parameter is used to enable or disable the write retyr mode when an error is detected during RAID-3/5 write operation.

The LCD shows

WRITE RETRY MODE

Possible values: **NO WRITE RETRY MODE**, **WRITE RETRY MODE**.

If **NO WRITE RETRY MODE** is set, an error will move the XFly2 status to **ONE DOWN**.

Number of Power and Fan Setup

This parameter is used to setup the number of power good detection and fan detection. This should not be altered unless reconfiguring the hardware on purpose.

The LCD shows

SINGLE POWER Without FAN 3

Possible values: **Single Power with fan 3**, **Dual Power with fan 3**, **Single Power without fan 3**, **Dual Power without fan 3**.

Buffer Segment Size Setup

This parameter is used to setup the buffer segment size per drive channel. This is the size of data block for one command. For large sequential data access, the bigger size can give better performance. On the contrast, for random access, the smaller size can give better performance.

The LCD shows

BUFFER SEGMENT SIZE 64KB/CH

Possible values: **8KB/CH**, **16KB/CH**, **32KB/CH**, **64KB/CH**

Wait Time of Retry Setup

This parameter is used to setup the interval between drive time out and retry.

The actual processing time will take 2 or 3 times of the setting. OS might need to setup a longer time out interval because of the longer retry processing on storage system.

The LCD shows

RETRY MAXIMUM TIME 5S

Possible values: **25S**, **10S**, **5S**, **1S**, **0.1S**

1S,**0.1S** are used for testing only.

Sequential List Size Setup

This parameter is used to setup the number of sequential access streams. The system maintains a table of recording sequential streams. It depends on simultaneous number of sequential streams and size of cache memory.

The LCD shows

SEQUENTIAL LIST SIZE 8

Possible values: **8**, **16**, **32**, **64**, **128**

Sequential Read Ahead Multiplier Setup

One time data read size depends on the bigger value between READ Ahead Size parameter and access size multiplies this Sequential Read Ahead TIMES. Cache memory will be quickly consumed if the large size is setup. Usually, the size should be set up small when host performance is low or vice versa.

The LCD shows

SEQUENTIAL READ AHEAD 8 TIMES

Possible values: **2 TIMES**, **4 TIMES**, **8 TIMES**, **16 TIMES**, **32 TIMES**

Cache Control Setup

This parameter is used to enable or disable the cache control flag of SCSI standard.

The LCD shows

DPO/FUA BIT DISABLE

Possible values: **ENABLE**, **DISABLE**.

- DPO(Disable Page Out): depends on the execution of command, DPO allows to discard the data in the cache by other commands.
- FUA(Force Unit Access): during command execution, it forces the drive access.

For details, please refer to SCSI-2 standard.

Slow Drive Detection Time Setup

This setting defines how long to wait for the drive response.

The LCD shows

CHECK DRV DELAY TIME 1S

Possible values: **NONE**, **0.1S**, **0.5S**, **1S**, **5S**

0.1S and **0.5S** are used for testing only.

This function does not work when the system is under **NONE** or **ONE DOWN** or **SYSTEM DOWN**.

If there is a certain process, and it causes data retries within a certain disk or media, or the time needed to write to another drive takes a long time, then entire performance is slowed down.Transfer speed will suffer.It is an early indication to warn for replacing slow drives.

The slow disk channel warning will be displayed on the LCD.

Power on Standby Time Setup

Sometimes drives are not immediately accessible to host after power-up.

For this period specified, the RAID controller will return to host access with such not ready status. For example, “Not Ready” is responded to “Test Unit Ready” command.

The LCD shows

WAIT POWER ON TIME **5S**

Possible values: **1S**, **5S**, **10S**, **15S**, **20S**

Drive Ready Wait Time Setup

This parameter is used to set up time to wait for drive getting ready.

Usually the drive is judged as DOWN if it is not ready after a certain period after power-up but some high speed and high capacity drive will need a longer WAIT time period to get ready.

The LCD shows

HDD WAIT READY TIME **1 MIN**

Possible values: **1 MIN**, **3 MIN**, **5 MIN**

Cache Memory Check Timing Setup

This setting specifies the speed of the background cache memory check to take place at the system power up initialization.

The LCD shows

CHECK CACHE **FAST**

Possible values: **NORMAL**, **FAST**, **NO**

If the cache memory onboard is large the check will take some time. So if you wish to speed up the process please set this to **FAST**. If set to **NO**, no cache check will take place. If you’ll be doing mainly performance measurements then set this to **NO** for the purpose. The actual cache during operation will not be affected by this setting.

HDD Patrol Mode Setup

The LCD shows

AUTO HDD PATROL

Possible values:

- **NO**: no auto patrol
- **AUTO**: Auto Patrol ON. The surface scan will start from LBA 0 of the disk between host commands.

Normally the surface scan of HDD will be executed in background. This is not applicable for RAID-0.

If there is any failure on read sector, the recovery sector generated by other disks will be written to the disk for recovery (Rewrite Function).

PATROL Mode can be changed during operation.

Patrol Time Setup

This parameter is used to specify the period of doing patrol.

The LCD shows

SYSTEM PATROL 30 DAYS/CYCLE

Possible values: **10S**, **5S**, **3S**, **5 DAYS/CYCLE**, **10 DAYS/CYCLE**, **20 DAYS/CYCLE**, **30 DAYS/CYCLE**

You can setup **10S**, **5S**, **3S** to perform one time patrol or you can setup **5 DAYS/CYCLE**, **10 DAYS/CYCLE**, **20 DAYS/CYCLE**, **30 DAYS/CYCLE** to perform whole capacity patrol.

The length of one patrol depends on this setting and the Buffer Segment Size.

2.1.4. Quick Overview of Front Panel Buttons Operations

Item	Operation
Force Reset	**MODE** + POWER ON
Mute Buzzer	**MODE**

Item		Operation
Parameter Setup	Start	**MODE** + **SELECT** + POWER ON
	Jump to Next Item	After parameter setup: **MODE**
	Change the Setting	After parameter setup: **SELECT**
	Save the Setting	After parameter setup: **MODE** + **SELECT**
	Cancel the Change	Power down during the parameter change
Status Information	Browse Parameters	During operation: **MODE** + **SELECT** Press **MODE** to move to next parameter
	Check Error Status	During operation: **MODE** Press **MODE**+ **SELECT** to cancel
	Cancel RETRY Display	During operation: press **MODE** + **SELECT** twice
	Performance Information	After browsing parameters: press **SELECT**. Use **MODE** to check each drive.
	Cache Memory Confirmation	Press **MODE** after Performance Information
	Slow Drive Confirmation	Press **MODE** after Cache Confirmation
	PATROL Mode Change (Auto, Force, No)	Press **MODE** after Slow Drive Confirmation. **SELECT**: switch among settings. **MODE** + **SELECT**: to set the change.
	Address confirmation MAC Address IP Address Address Mask Gateway Address	Press **MODE** after PATROL Mode Change. Use **MODE** to check each address.

2.1.5. Factory and Default Settings

Note
Some parameters are preset by EVS for optimal performance. In such cases, these factory values differ from the default values got when resetting the parameter.

Parameter	Default	EVS Factory	Notes
Disk Size	DISK size	2TB or 4TB	2TB / 4TB are the only disks qualified by EVS.
RAID Mode	RAID-6	RAID-5	SINGLE DRIVE / RAID-1 / RAID-0 2 / RAID-1 3 / RAID-10 / RAID-6 / RAID-0 / RAID-3 / RAID-5
Drive Mode	10	5	3 / 4 / 5 / 6 (7, 8, 9, 10)
Sector Size	512B	512B	512B / 4K
LUN Size	FULL	FULL	FULL / MAX 2TB / 1/2 DIV / 64GB+ALL / 64GB+MAX 2TB / 256GB+ALL / 1TB+ALL / 2TB+ALL
LUN Mode	LUN DIRECT no BIAS	LUN DIRECT no BIAS	DIRECT NO BIAS / SWAPPED NO BIAS / DIRECT for MBR / SWAPPED for MBR
Parity Stripe	2 MB/DRIVE	2 MB/DRIVE	2 MB / 1 MB / 256 KB / 128 KB
SATA3 Host	Enabled	Enabled	Enabled / Disabled
USB3 Host	Disabled	Enabled	Enabled / Disabled
Recover Rate	5Min./GB	5Min./GB	TIME 0Sec / TIME 0.1Sec / TIME 1Sec / TIME 10Sec/ 2Min./GB / 5Min./GB / 10Min./GB / 20Min./GB
Cache Size	512 MB	512 MB	64 MB / 128MB / 256MB / 512MB
Write Mode	ALL PENDING 0.1Sec	ALL PENDING 0.1Sec	WAITING / BUFFERD / PENDING 0.1Sec / 1 Sec / ALL PENDING 0.1Sec / 1Sec
Verify Wait	VERIFY WAIT READ aft WRITE	VERIFY WAIT READ aft WRITE	VERIFY WAIT READ aft WRITE / VERIFY WAIT NO READ aft WRT / NO VERIFY READ aft WRITE / NO VERIFY NO READ aft WRT
Read Ahead	64 KB	64 KB	0 KB / 8 KB / 64 KB / 256 KB / 1 MB / 4 MB
Firmware	Ver. x.xxx	Ver. x.xxx	Change if firmware is upgraded
Vendor ID	EVS	EVS	
Model No	Product ID is XFLD_1S	XFLD_1S	Vary as different models
Serial No	Serial No ID xxxxxxxx	xxxxxxxx	
IP Address	192.168.50.210	1.1.x.x	See section "Background Parameters" on page 17. Can be changed with **SELECT** Button.
Address Mask	255.255.255.0	255.255.255.0	Can be changed with **SELECT** Button
Parity	ENABLE	ENABLE	ENABLE / DISABALE
Host Rate	6Gb/s	3Gb/s	3Gb/s / 6Gb/s

Parameter	Default	EVS Factory	Notes
NCQ Mode	Read Priority	READ Priority	No queuing, read priority, no reorder, no priority
Disk Speed	3Gb/s	6Gb/s	3Gb/s / 6Gb/s
Fan Speed Temperature	45 deg. C	45 deg. C	20 deg. C, 30 deg. C, 40 deg. C, 45 deg. C, 50 deg. C, 55 deg. C, 60 deg. C
Flush Cache	Enable	Enable	Enable / Ignore
Back Write Size	2MB/CH	2MB/CH	64KB / 128KB / 256KB / 512KB / 1MB / 2MB / 4MB
Write Retry	WRITE RETRY	WRITE RETRY	NO WRITE RETRY / WRITE RETRY
No of power and fan setup	Dual Power with fan 3	Single Power without fan 3	Single Power with fan 3, Dual Power with fan 3, Single Power without fan 3, Dual Power without fan 3
Buffer Segment	64KB/CH	64KB/CH	8KB/CH / 16KB/CH / 32KB/CH / 64KB/CH
Retry Time	5S	5S	25S / 10S / 5S / 1S / 0.1S
Sequential List Size	8	8	8 / 16 / 32 / 64 / 128
Sequential Read Ahead	8 TIMES	8 TIMES	8 TIMES / 16 TIMES / 32 TIMES / 2 TIMES / 4 TIMES
DPO/FUA	Disable	Disable	ENABLE / DISABLE
Check Drive Delay	1S	1S	NONE / 0.1S / 0.5S / 1S / 5S
Power On Wait	5S	5S	1S / 5S / 10S / 15S / 20S
Drive Wait Ready	1 MIN	1 MIN	1 MIN / 3 MIN / 5 MIN
Check Cache	NORMAL	FAST	NORMAL / FAST / NO
Auto Patrol	AUTO HDD PATROL	AUTO HDD PATROL	AUTO / NO
Patrol Wait Time	30 DAYS/CYCLE	30 DAYS/CYCLE	WAIT 10S / 5S / 3S /5 / 10 / 20 / 30 DAYS/CYCLE

2.2. Web-Based Monitoring and Setup

2.2.1. Setting the IP Address

To monitor XFly2 via the Web management GUI, you can connect the Ethernet cable to a host computer.

Ethernet parameter must be configured correctly before launching a Web browser (such as Internet Explorer).

To set up the IP address, please follow the steps below.

1. Press and hold both the **MODE** button and the **SELECT** button while powering up.

   The LCD screen shows the message indicating that the system enters the Parameters Setting mode:

ARRAY PARAMETERS SETTING !

2. Press **SELECT** then **MODE** until the IP address is displayed.

> **Note**
> The IP address has been set by EVS to a value such as 1.1.X.X, based on the XFly2 serial number. However, the default IP address is 192.168.50.210.

3. Press the **SELECT** button to increase the IP address. The longer you hold the **SELECT** button, the faster the number is increased.
4. Press **MODE** to move to the next field.
5. Save your change by pressing both the **MODE** button and the **SELECT** button for at least 3 seconds.

   The LCD shows the following message: **POWER DOWN PLEASE!**
6. Shut down and power up so the new IP address will be effective.

2.2.2. Overview of the Functions Available for each Mode with the Web GUI

Menu	Monitor Mode		Management Mode		Setup Mode	
	Read	Modify	Read	Modify	Read	Modify
RAID Monitor	√	X	√	X	X	X
Basic Parameters	√	X	√	X	√	√
Additional Parameters	√	X	√	√	√	√
Critical Parameters	X	X	X	X	√	√

Menu	Monitor Mode		Management Mode		Setup Mode	
	Read	Modify	Read	Modify	Read	Modify
Network Parameters	√	X	√	X	√	√
Mail Setup	X	X	√	√	√	√
SNMP Setup	X	X	√	√	√	√
Logged Data	√	X	√	X	√	X
Update Firmware	X	X	X	X	√	√
Login for Management Mode	√	√	X	X	X	X
Change Password	X	X	X	X	√	√

Read: you can see the items

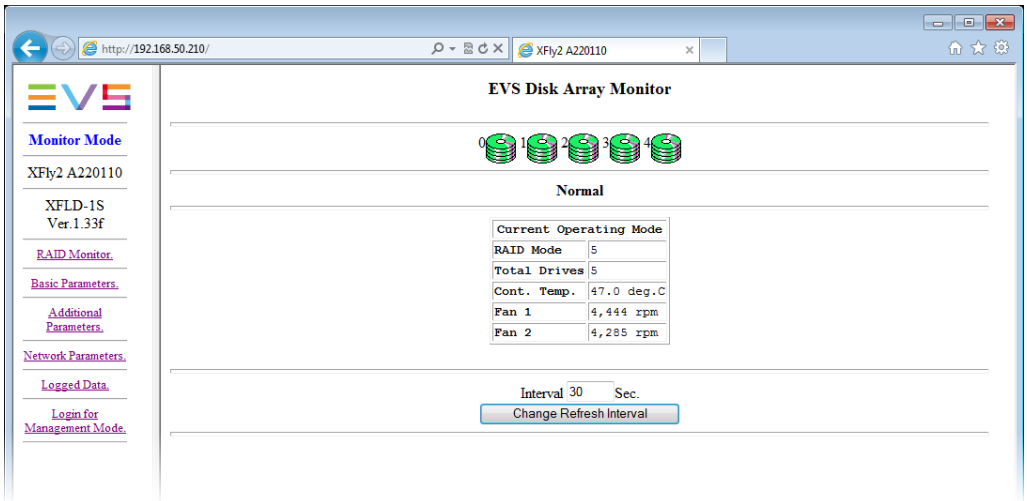
Modify: you can modify the parameters or execute the operation.

2.2.3. Monitor Mode

Introduction

When the Ethernet cable is connected and the machine is powered up, launch the web browser with the preset IP address: http://<IP Address>.

The Web GUI will be displayed as below for Monitor mode.



The left hand side lists the main menu items and the right side displays detail items or information associated with the selected menu item.

The Monitor mode can be used to check the status and/or to change the RAID parameters.

XFly2 Status Monitor

Click **RAID Monitor** on the main menu to check the enclosure status.

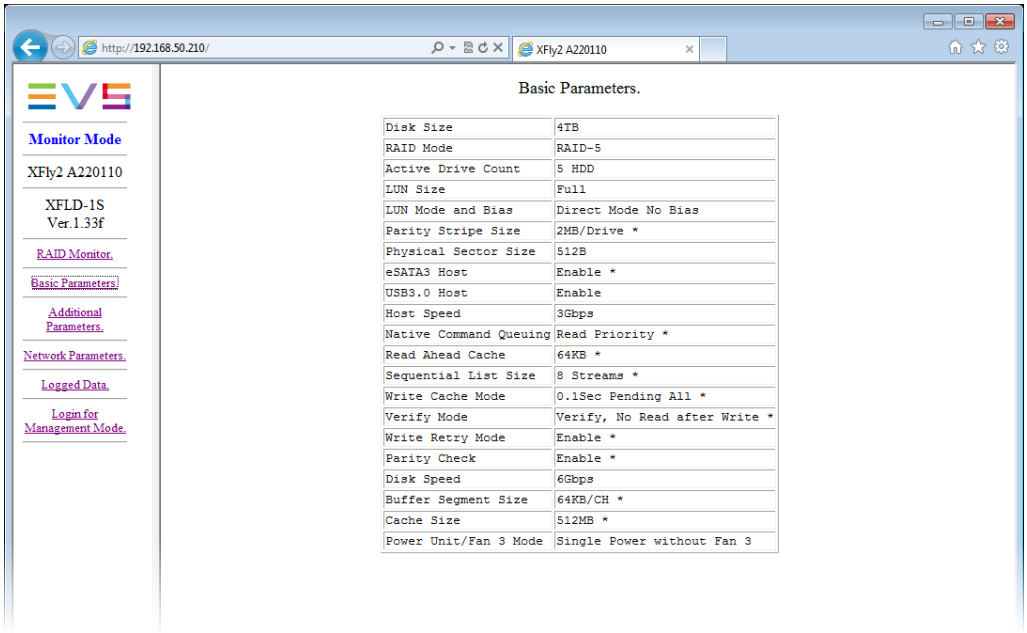
The refreshing interval can be changed by specifying the requested time and apply Change Refresh Interval.

Drive status is differentiated by color:

Color	Meaning
Green	Normal
Red	One Down Two Down System Down
Yellow	Recovering Verifying
White	Not installed

Basic Parameters

Click **Basic Parameters** on the main menu to show basic RAID parameters.



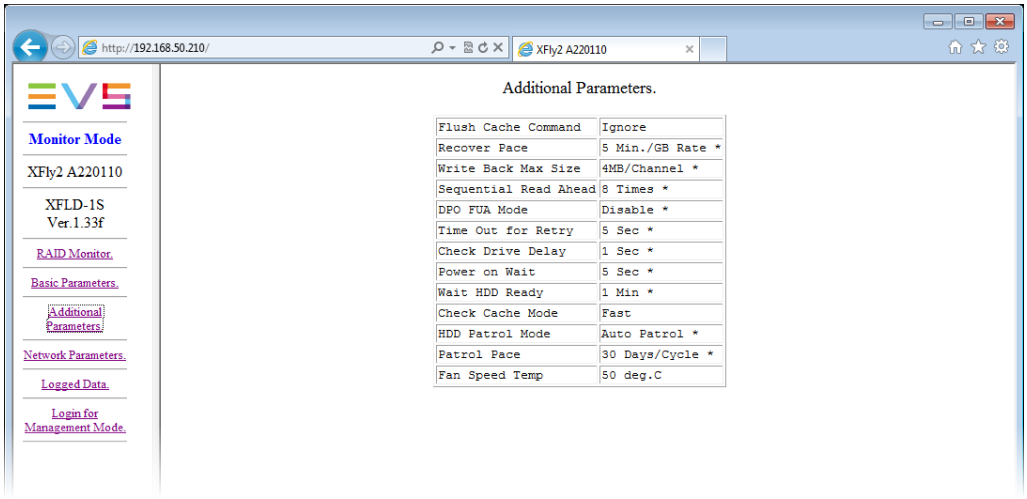
See section "RAID Operational Parameters" on page 8 for an explanation of each parameter.

Additional Parameters

Click **Additional Parameters** on the main menu to show additional RAID parameters.

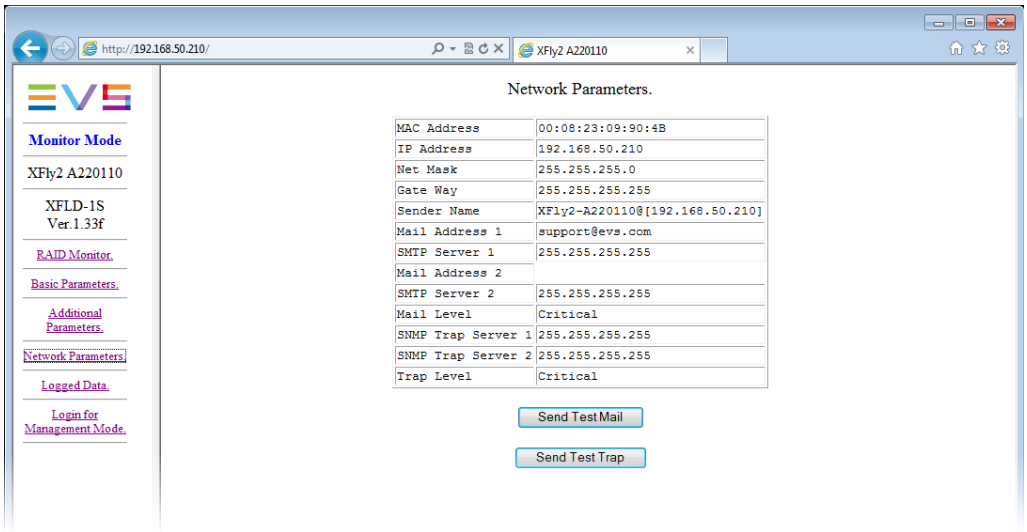
They correspond to the background parameters displayed on the LCD screen.

See section "Background Parameters" on page 17 for an explanation of each parameter.



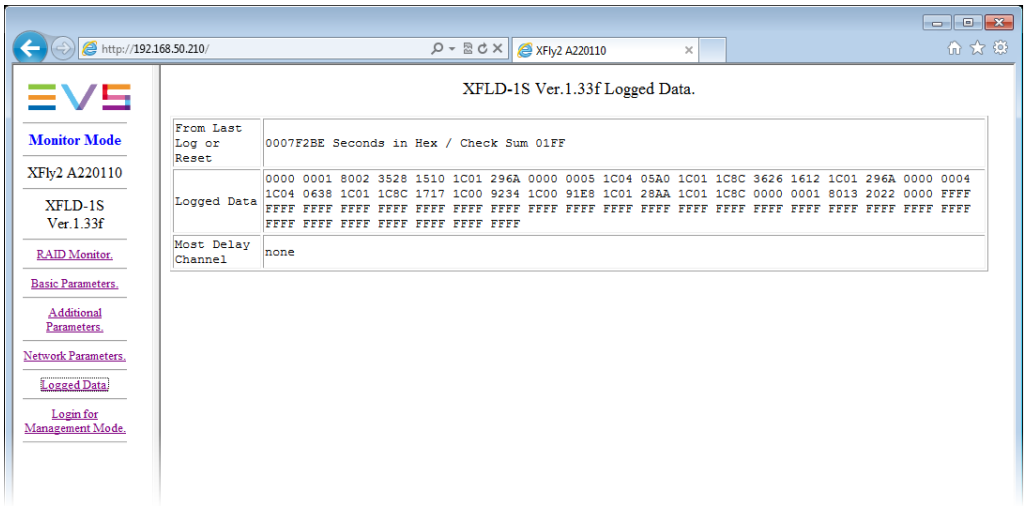
Network Parameters

Click **Network Parameters** on the main menu to show network related parameters.



Logged Data

Click **Logged Data** on the main menu to show log data of the storage.


http://192.168.50.210/
XFly2 A220110
Monitor Mode
XFly2 A220110
XFLD-1S Ver.1.33f
RAID Monitor.
Basic Parameters.
Additional Parameters.
Network Parameters.
Logged Data.
Login for Management Mode.
XFLD-1S Ver.1.33f Logged Data.
From Last Log or Reset
0007F2BE Seconds in Hex / Check Sum 01FF
Logged Data
0000 0001 8002 3528 1510 1C01 296A 0000 0005 1C04 05A0 1C01 1C8C 3626 1612 1C01 296A 0000 0004 1C04 0638 1C01 1C8C 1717 1C00 9234 1C00 91E8 1C01 28AA 1C01 1C8C 0000 0001 8013 2022 0000 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
Most Delay Channel
none

Log data shows the events history since starting. First item on top of the log table shows either the lapse of last log or the lapse time since starting. Time is shown in Second by hexadecimal. The checksum value on its right side is only for firmware identification. It varies between each firmware version.

The number 0020～0022 has special meaning for email notification error. See section "Setup of eMail Notification" on page 33 for explanation.

The logged data is not intended to be examined by end users and should be reported to technical support staff whenever it is required.

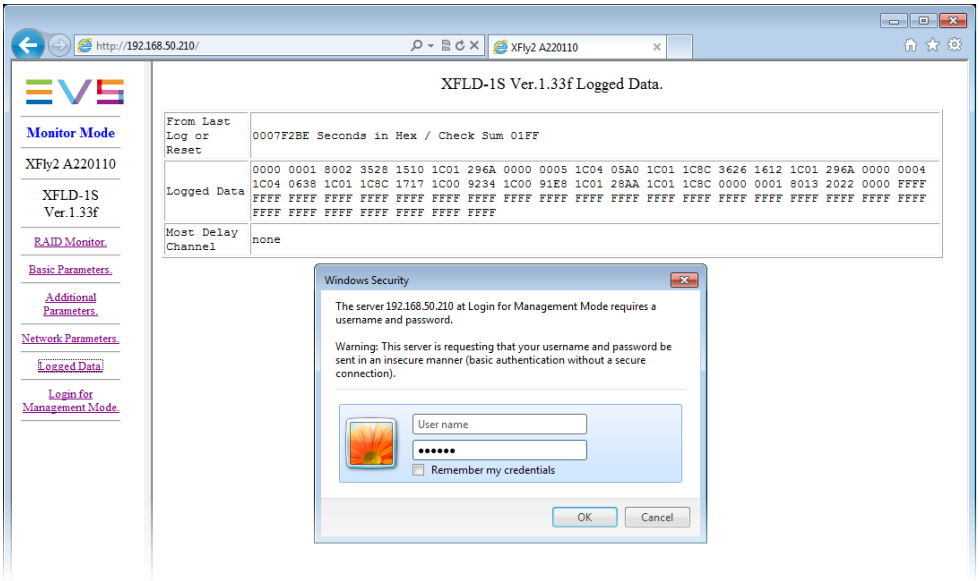
2.2.4. Management Mode

Management Mode Login

The Management mode is used to configure additional parameters, email notification and SNMP traps.

To access the Management mode, you need to log in:

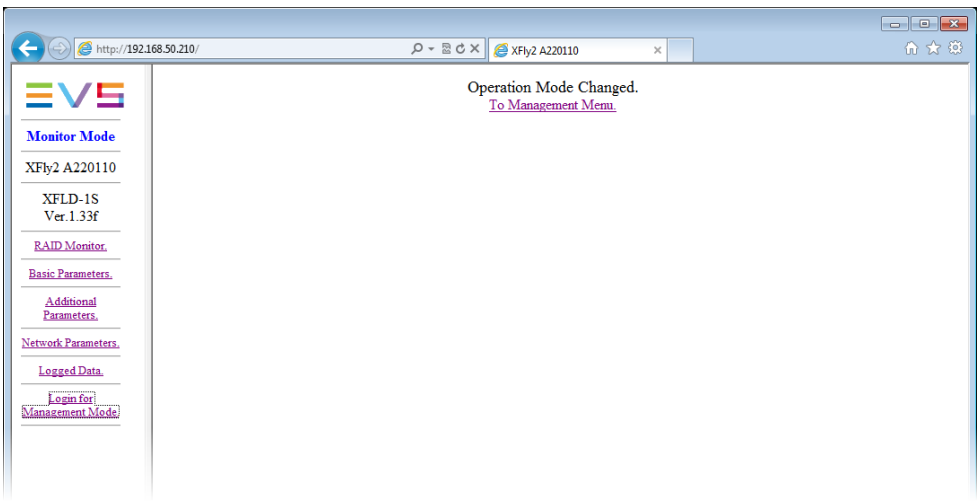
1. Click **Login for Management Mode** on the main menu of the Monitor Mode.



2. Enter the default password **passwd**, leave the **User Name** field empty and click **OK**.

Note
To change the password, see section "Change Password" on page 39.

The following window is displayed on screen and indicate that the operation mode has changed:

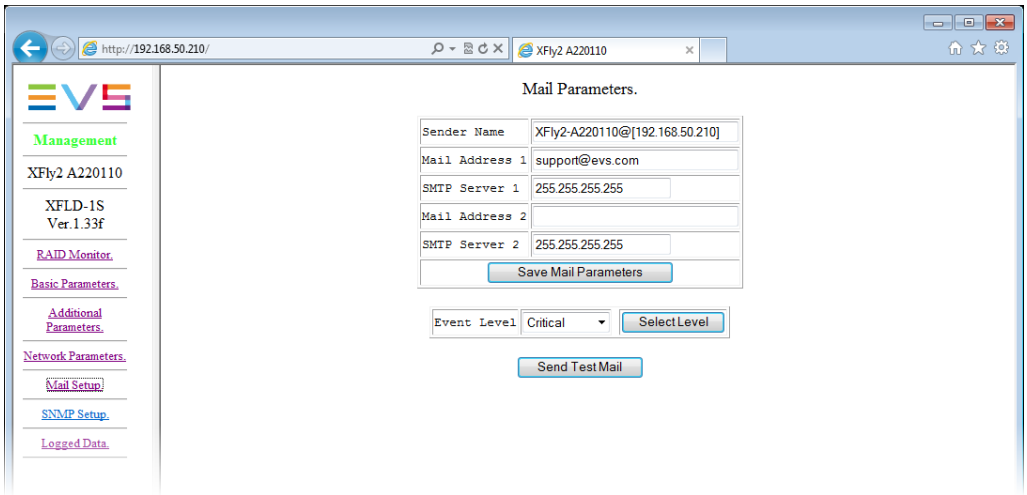


3. Click the **To Management Menu** link to switch to Management Mode.

Setup of eMail Notification

Mail Parameters

Click **Mail Setup** on the main menu to show the Mail Parameters.



From this window, you can change email notification parameters.

Sender Name

Up to 63byte alphabet, number, “_”, “-“, “@”, and “.” is allowed. Two byte characters such as Chinese are not allowed.

Receiver Addresses

Up to two receiver addresses are allowed.

For users who want to have more than 2 receivers, you need to setup aliases on assigned email server. Allowable characters are the same as for Sender Name.

SMTP Server Address

Set up the IP address of SMTP server.

255.255.255.255 will prohibit emails to be sent out.

1. Directly set up the IP address to SMTP server

   This is the most effective way to issue email alert. However, Gateway address might be necessary if SMPT server is not within the same LAN domain. See section "Basic Parameters" on page 38. At the same time, this will expose the XFly2 to external network environment, which results in security issue.

2. Assign local SMTP Server

   If there is no need for authentication, you can forward (relay) from XFly2 notification by setting up the local SMPT server. For Windows OS, you can set up the IP address of XFly2 on SMPT which has the RELAY function.

Send Test Mail Button

By clicking the **Send Test Mail** button once Mail Parameters have been entered, you can send a test email to the receiver address for confirmation.

Sending Test Mail is shown on the screen during email transmission.

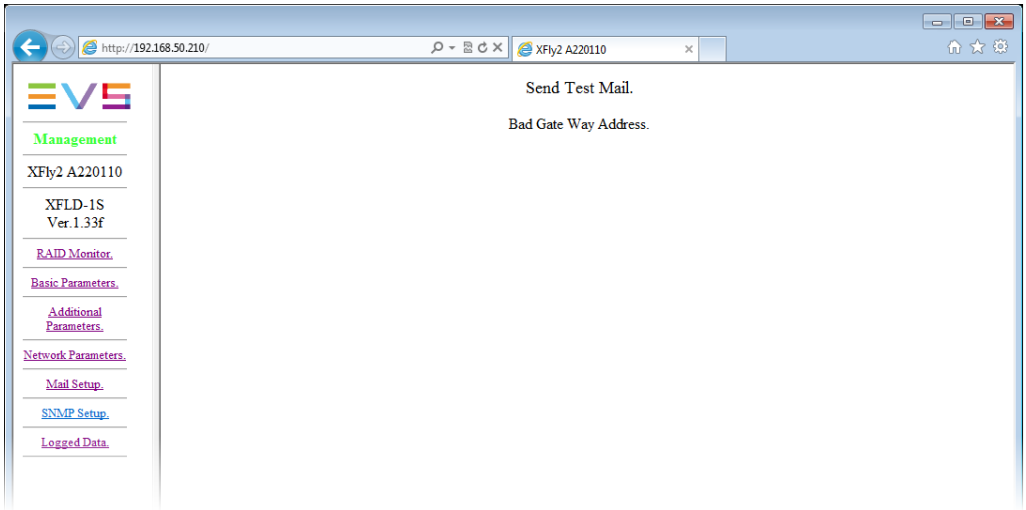
The log will record a message if the test mail was sent out.

If the Send Test Mail operation fails after retrying, an error log will be recorded:

- 0020: SMTP was not found
- 0021: Gateway was not found
- 0022: SMTP did not respond

It might take up to 10 minutes for the retrial if the mail could not be sent.

The following screenshot shows the message displayed with a bad address.



Note
There might be cases when SMTP do respond but with wrong answer. We suggest trying a different SMTP server under such situation

Mail Format

The mail format looks as follows:

From: XFly2-A220110@[192.168.50.210]

To: support@evs.com

Subject: Alert from XFly2

Alert Condition of EVS XFly2xx-xxx6 Ver.x.xxx

Serial Number= xxxxxxxx

Alert Reason = Test of Send Mail.

- From: Mail sender, this machine
- To: Receiver
- Subject
- Alert Condition of vendor name, device name, and version.
- Serial Number: the serial number of this device
- Alert Reason: Cause of this email sent

Conditions of Mail Notification

The mail will be sent under the following conditions:

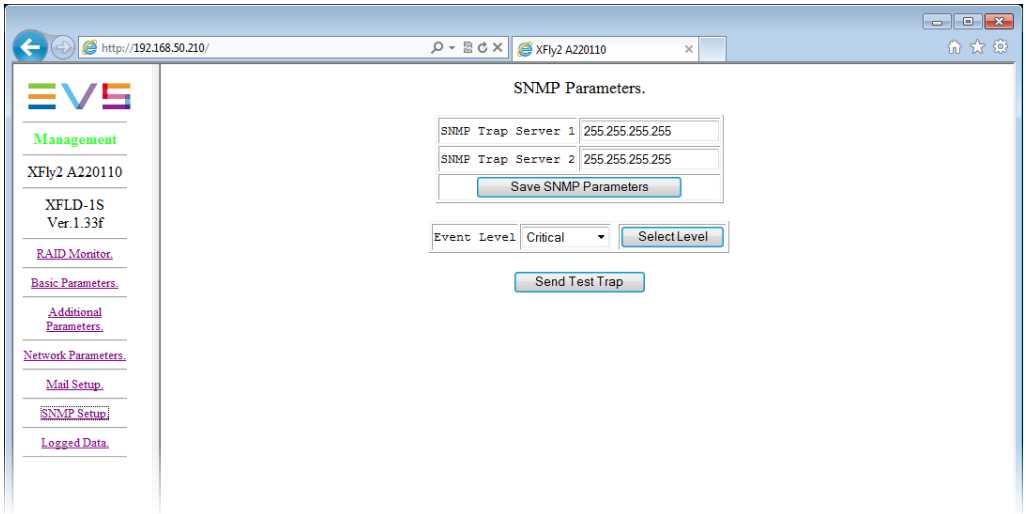
- Drive failure
  - One Drive Down
  - Two Drives Down
  - System Down
- Completion of Drive Recovery Recover Finished
- System Power Off Power Unit Down
- Fan is failed Fan Unit Down

If the event remains, the same email will be sent again upon the power recycling.

If there are more than two events happening at the same time, only the first one will be sent.

SNMP Setup

Click **SNMP Setup** on the main menu, and follow the steps below to configure SNMP.



1. You can set up the IP address of your SNMP server in the **SNMP Trap Server 1** and **SNMP Trap Server 2** fields.

   If the server is not located within LAN, please enter the same IP address as your Gateway.

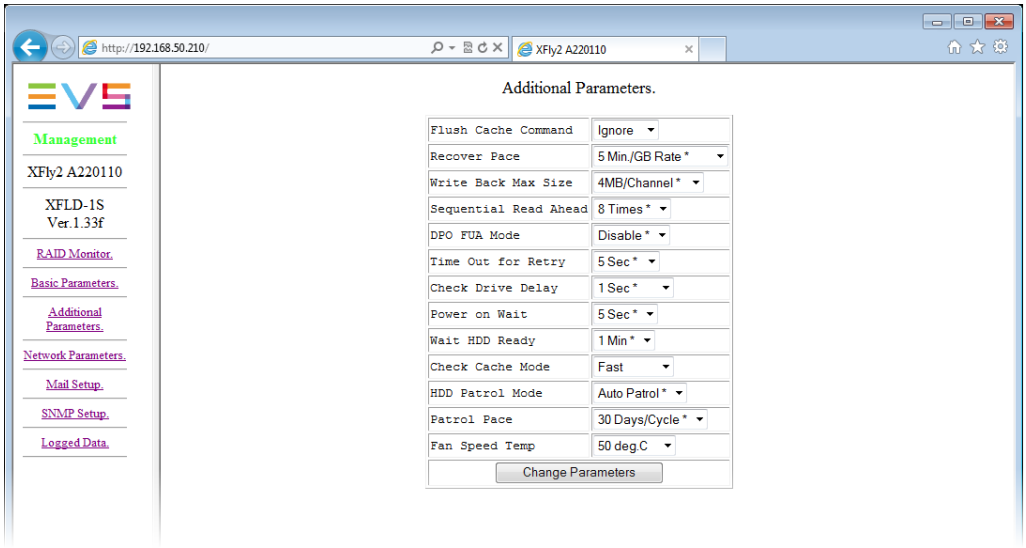
   Click **Save SNMP Parameters** to save these IP addresses.

2. Set up the level of status monitor by selecting one of the three categories in the **Event Level** field: **Critical**, **Warning**, **Notification**.

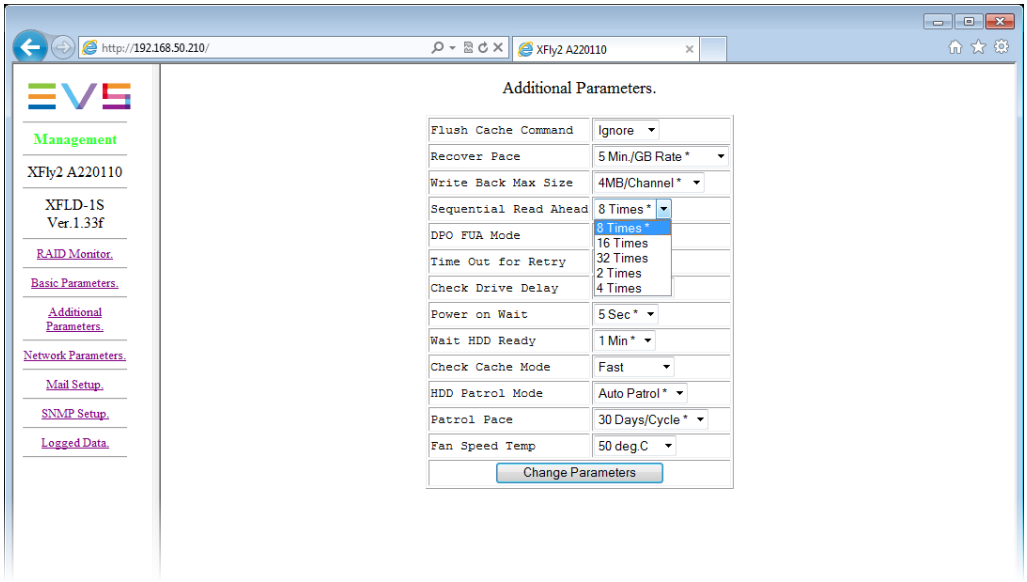
3. Click **Send Test Trap** to test whether it works.

Additional Parameters

Click **Additional Parameters** on the main menu to show the Additional Parameters page.



Parameter settings under additional parameters can be changed without affecting data on the RAID system.



Scroll to the parameter value you wish to change, then click the **Change Parameters** button to save the change.

2.2.5. Setup Mode

Introduction

Powering down and up the RAID storage is necessary to get into the Setup mode.

From the Setup mode, you can change all kinds of parameters for the controller.

1. Press and hold both the **MODE** button and the **SELECT** button while powering up to enter the Parameters Setting mode.

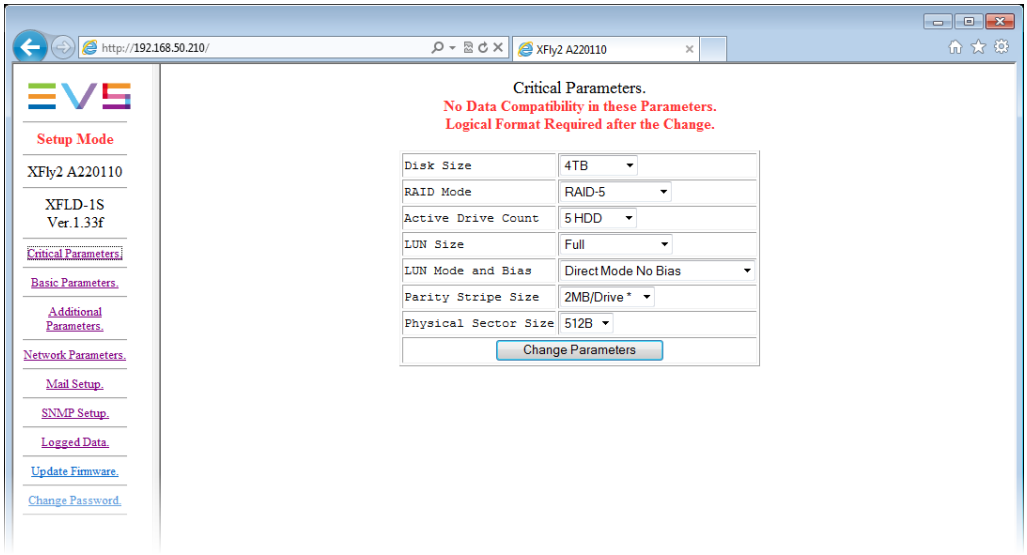
   The LCD displays **ARRAY PARAMETERS SETTING!**

2. Launch the web browser with the preset IP address: http://<IP Address>.

   The Web GUI displays.

Critical Parameters

Click **Critical Parameters** on the main menu to show the Critical Parameters page.

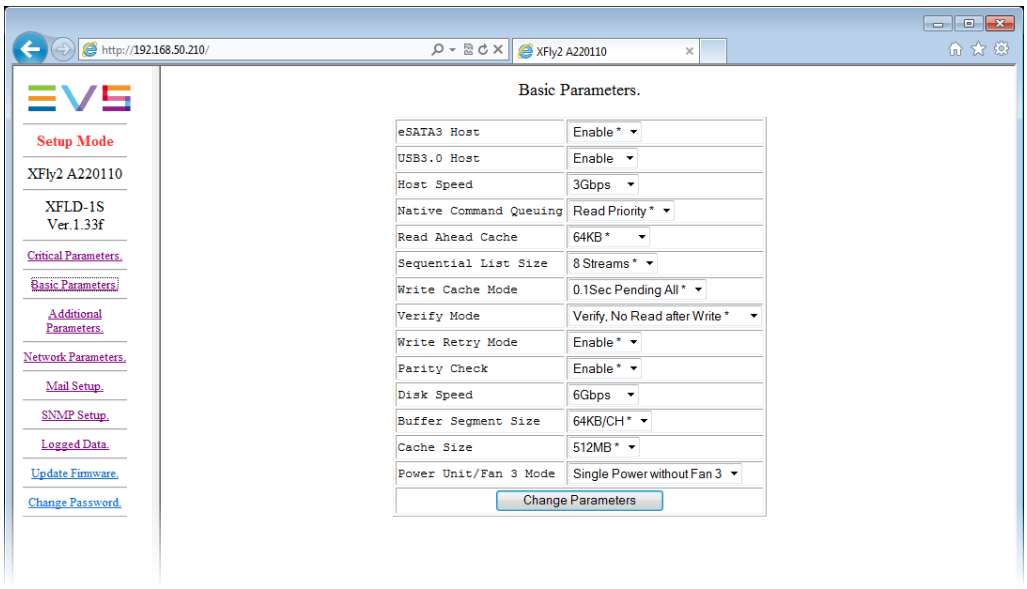


1. Change the parameter needed and then click the **Change Parameters** button.
2. Reboot the system to make new parameters effective.
3. While powering up, hold down the **MODE** button at the same time to initialize the controller based on configured parameters.

Note
Changing any critical parameters will result in whole data loss. After change, it is required to re-create new partition and format the data volume.

Basic Parameters

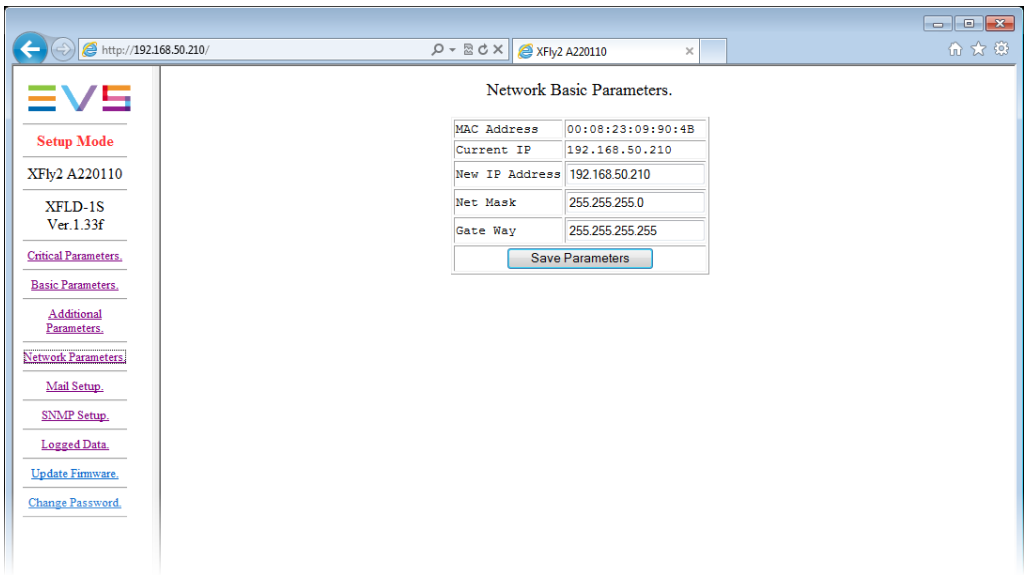
Click **Basic Parameters** on the main menu to show the Basic Parameters page.



1. Change the parameter needed and then click the **Change Parameters** button.
2. Reboot the system to make new parameters effective.

Network Parameters

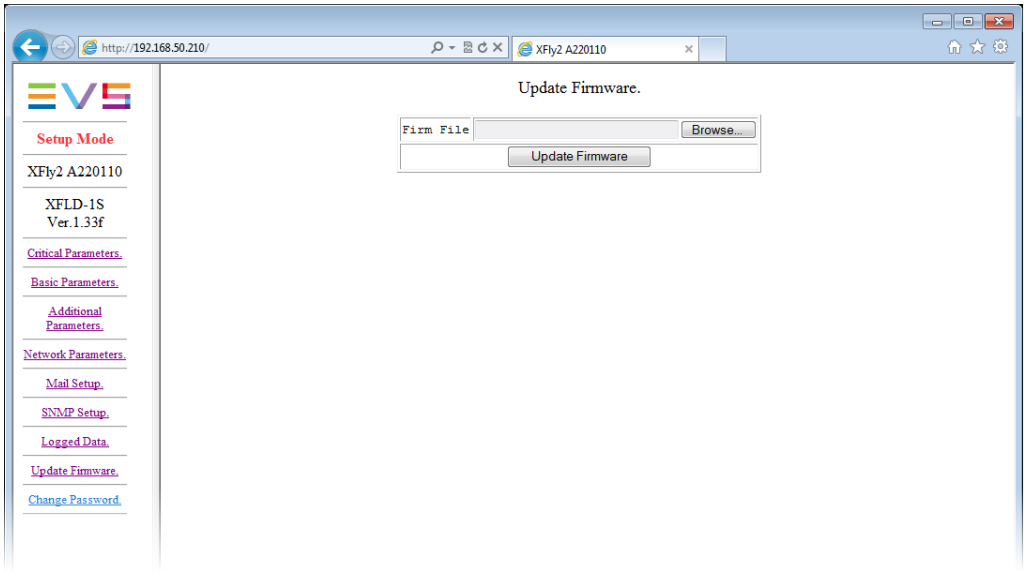
Click **Network Parameters** on the main menu to show the Network Parameters page.



1. Change the parameter needed and then click the **Save Parameters** button.
2. Reboot the system to make new parameters effective.

Update Firmware

Click **Update Firmware** on the main menu to update the firmware.



Browse to the firmware file and click the **Update Firmware** button to start the update process.

Once the firmware update successfully starts, the screen shows **Flash PROM Write Started …** and the front LCD display shows the following message:

Please Wait!
Firm Updating

Upon completion, LCD message will show

Power off Now!
Firm Update OK

Reboot the system to make new firmware effective.

If the update process failed for any reason, a message will be shown on screen: **Wrong firmware file** or **transmission error**. The LCD screens displays:

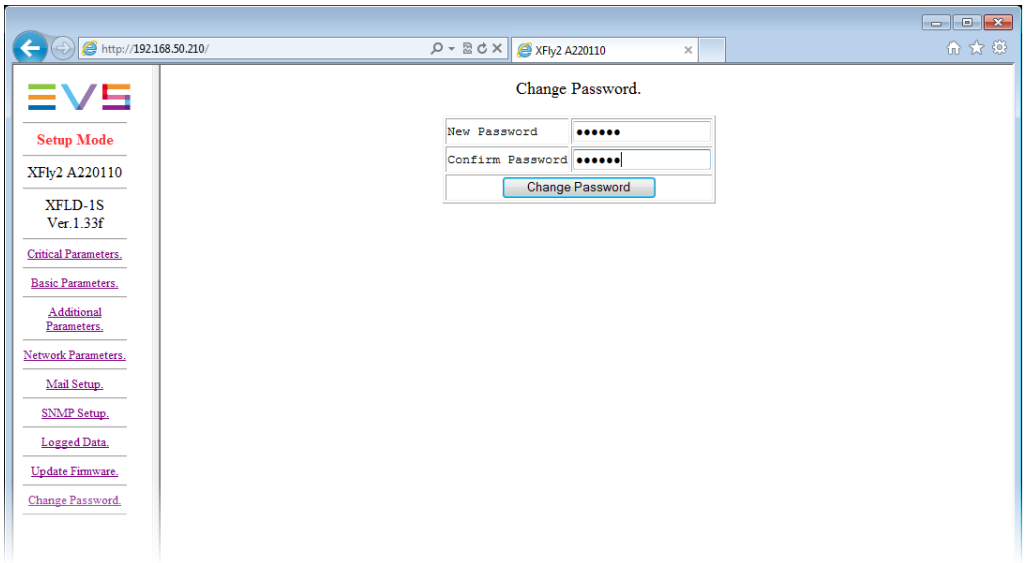
Error Retry Now!
Don't Power off

Warning
Do not power down the RAID system at this point. Instead, retry again without rebooting the system. If the process still fails, please contact our support staff.

Change Password

Click **Change Password** on the main menu to show the Change Password page.

This allows you to change the password of Management Mode.



To do so, proceed as follows:

1. Enter the new password (Max 6 digits) in the **New Password** field.
2. Enter the new password again in the **Confirm Password** field.
3. Click the **Change Password** button to save the change.
4. Reboot the RAID system to make the change effective.

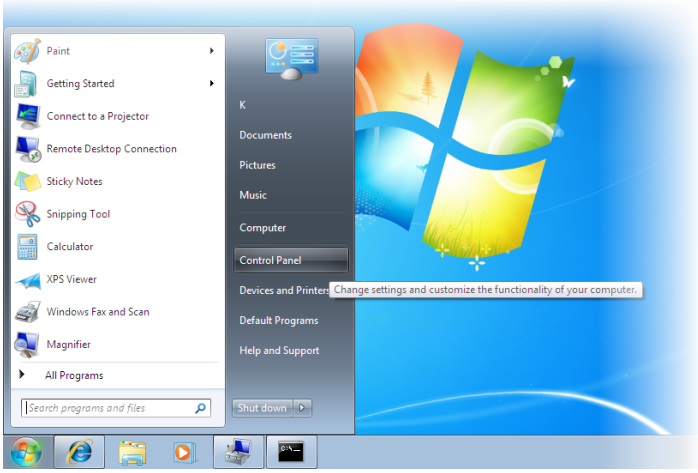
What if I forgot my password?

User can set up a new password without entering an old password.

2.3. Host LAN Configuration

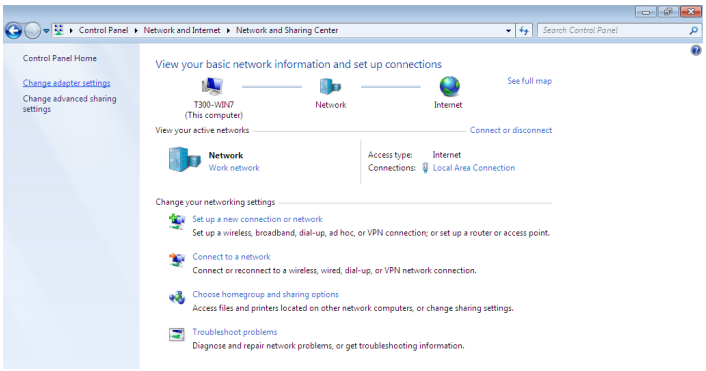
2.3.1. IP Setup for Windows

1. Click **Start > Control Panel**.



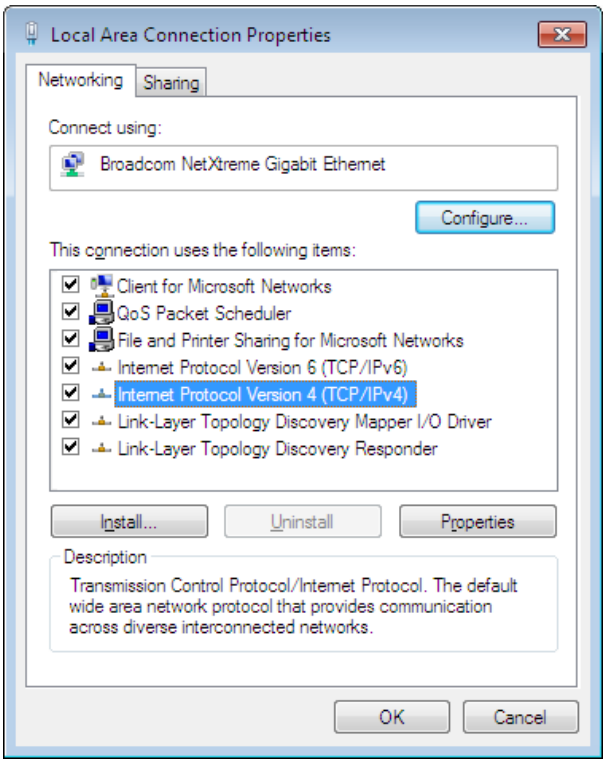
2. From the Control Panel window, navigate to **Network and Internet -> Network and Sharing Center**.

   The following window displays:


Control Panel ▸ Network and Internet ▸ Network and Sharing Center
Search Control Panel
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
T300-WIN7
(This computer)
Network
Internet
View your active networks
Connect or disconnect
Network
Work network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
Choose homegroup and sharing options
Access files and printers located on other network computers, or change sharing settings.
Troubleshoot problems
Diagnose and repair network problems, or get troubleshooting information.

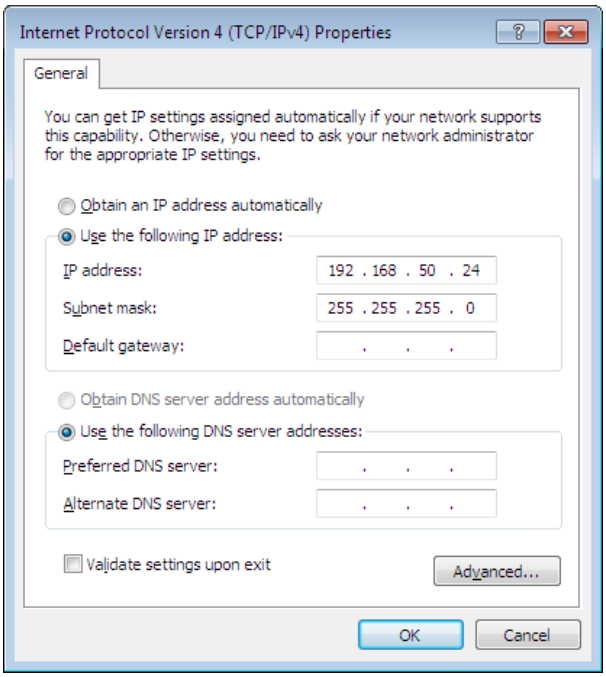
3. Click Change adapter settings.
4. Right-click **Local Area Connection** and select **Properties**.

   The Local Area Connection Properties window opens:



5. Select **Internet Protocol Version 4(TCP/Ipv4)** then click the **Properties** button.

   The following window displays:


Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 50 . 24
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

6. Set Internet Protocol Properties as follows:
   - Select **Use the following IO address**.
   - Considering RAID IP ADDRESS is 192.168.50.210 set as follows:

     IP address: 192.168.50.XXX (replace XXX by unused address)

     Subnet mask: 255.255.255.0
   - Click **OK**.

Note
Make sure the IP address used here is not used by another device, or it may not work properly.

7. Check the change
   a. Click **Start > Run** and enter **cmd.exe** to open the command prompt window.
   b. Enter **ipconfig /renew**
   c. Enter **ipconfig /all**
   d. Check if the IP Address has changed correctly.

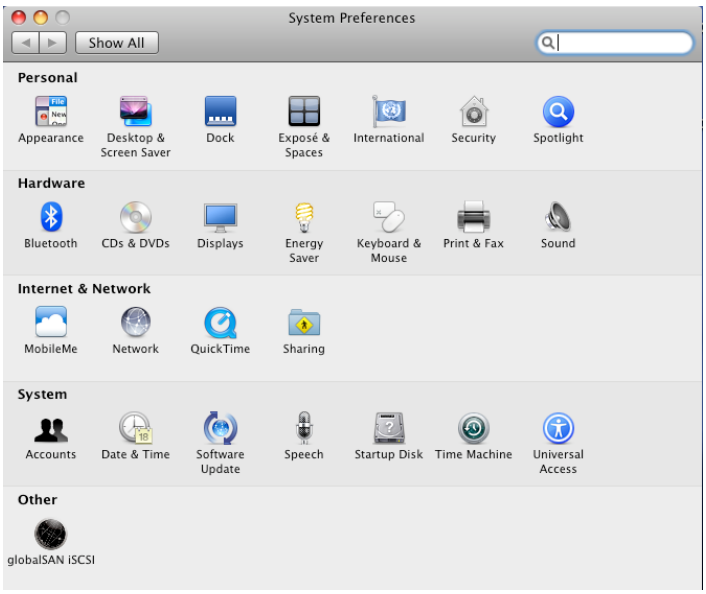
2.3.2. IP Setup for Linux

1. Open a Terminal window.
2. Enter **# ifconfig eth0 192.168.50.X**. (replace X by unused address)
3. Enter **$ sudo dhclient** then press **ENTER**.
4. Enter **#ifconfig** to confirm the changed IP address.

2.3.3. IP Setup for MAC OS X

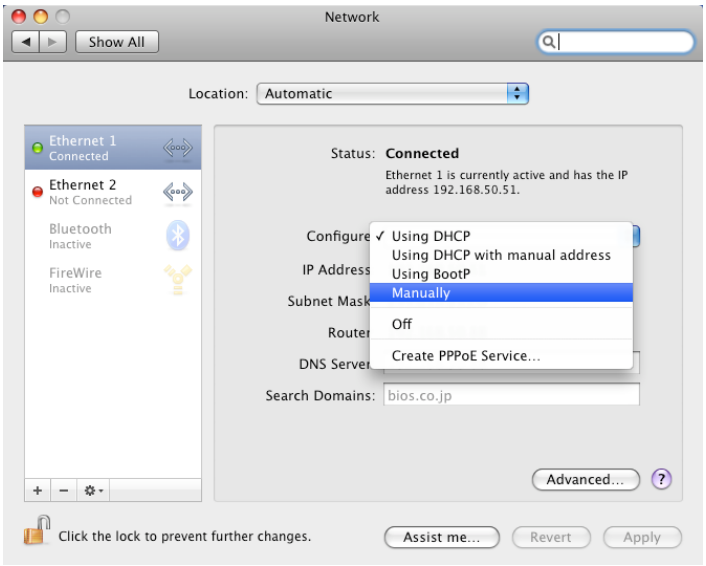
1. Click **System Preferences**

   The System Preferences window opens:

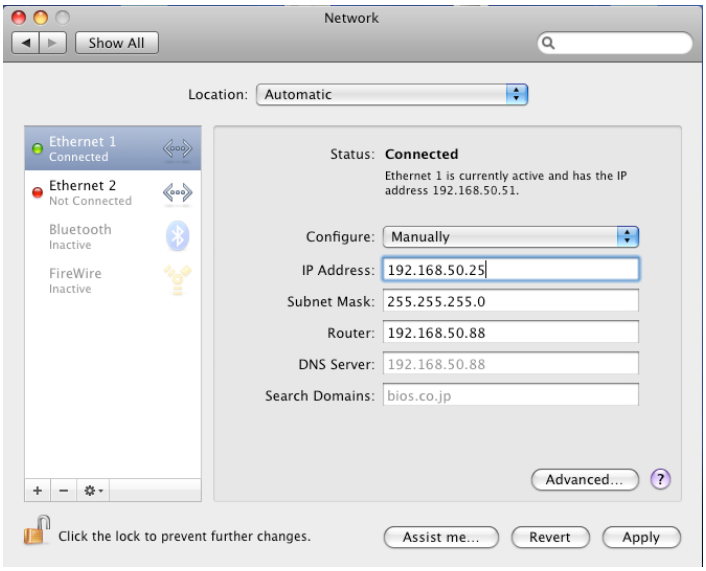


2. Click **Network**.

   The Network window opens:



3. In the Configure field, select **Manually**.
4. Enter the IP address.



5. Click **Apply**.

> **Note**
> Make sure the IP address used here is not used by another device.

3. Format

3.1. Linux

The section explains how to use with Linux.

Please refer to Linux OS user guide for details.

Login as Superuser

Handling a disk is a privileged function for Superuser only. Please login as a Superuser, a.k.a. **root**.

```
<Host name> login: root
Password: ******

Last login: XXX XXX XX XX:XX:XX
…
…
[root@<Host name> /root]#
```

Partition Creation and Formatting (fdisk command)

Starting fdisk

Example below is when XFly2 is recognized as /dev/sdb

```
[root@sheep /root]# fdisk/dev/sdb
```

Creating partition

Example below is when creating one partition takes whole disk spaces

```
Command (m for help): n (n:fdisk command)
Command action
 e extended
 p primary partition (1-4)
p
Partition number (1-4): 1
First cylinder (1-182399, default 1): 1
Last cylinder or +size or +sizeM or +sizeK (1-182399,
default 182399): 182399

Command (m for help): p  p:fdisk command

Disk /dev/sda: 255 heads, 63 sectors, 120130 cylindersUnits
= cylinders of 16065 * 512 bytes

   Device Boot    Start     End        Blocks     Id  Ststem
    /dev/sda1       1     182399    1465119936   83   Linux

Command (m for help): w  w:fdisk command
The partition table has been altered!

Calling ioctl( ) to re-read partition table.
Syncing disks.

WARNING: If you have created or modified any DOS 6.x
partitions, please see the fdisk manual page for additional
information.
```

Formatting Partition Created (mke2fs command)

```
[root@sheep /root]# mke2fs /dev/sda1
mke2fs 1.29, 24-Sep-2002 for EXT2 FS 0.5b, 95/08/09
Filesystem label=
OS type:Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
183140352 inodes, 366279984 blocks
18313999 blocks (5.00%) reserved for the super user
First data block=0
11178 block groups
32768 blocks per group, 32768 fragments per group
16384 inodes per group
Superblock backups stored on blocks:
 32768, 98304, 163840, 229376, 294912, 819200, 884736,
1605632, 2654208,
 4096000, 7962624, 11239424, 20480000, 23887872, 71663616,
78675968,
 102400000, 214990848

Writing inode tables: done
Writing superblocks and filesystem accounting information:
done
[root@sheep /root]#
```

Mounting File system

```
[root@sheep /root]#mount/dev/sdb1/RAID
```

/dev/sdb1 is Device partition you are mounting and **/RAID** is the mount point.

3.2. Windows 7

The section explains how to use with Windows 7 for reference.

Please refer to Windows 7 user guide for details.

Confirming the Connection

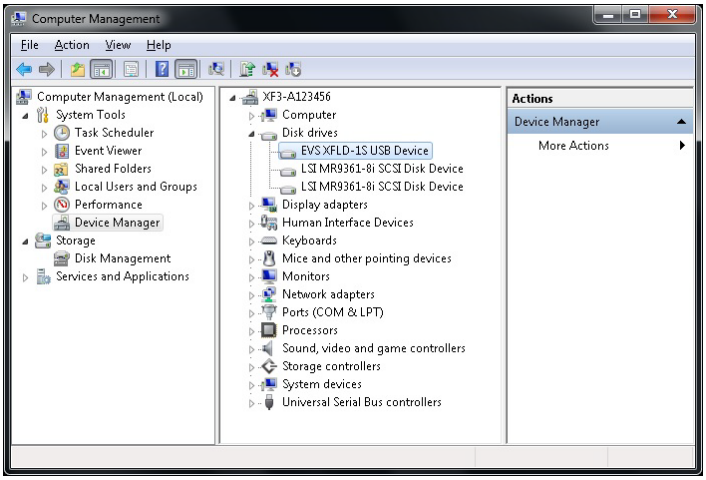
1. Connect and power up XFly2 then starts with host computer.
2. Click **Start**.

3. Right-click **Computer** and select **Manage**.

   The Computer Management window opens.

4. Click **Device Manager** and then click **Disk Drives**

5. Check that XFly2 has been registered:



If you do not see XFly2 here, please check below.

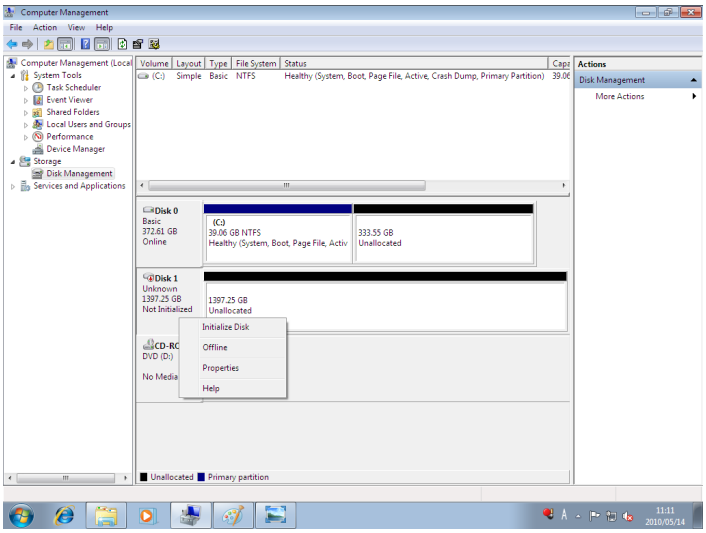
- Is the host HBA recognized by OS or not? Please consult with your HBA vendor if not.
- Was XFly2 normally started and connected?

Partition Creation and Formatting

1. Click **Start**.
2. Right-click **Computer** and select **Manage**.

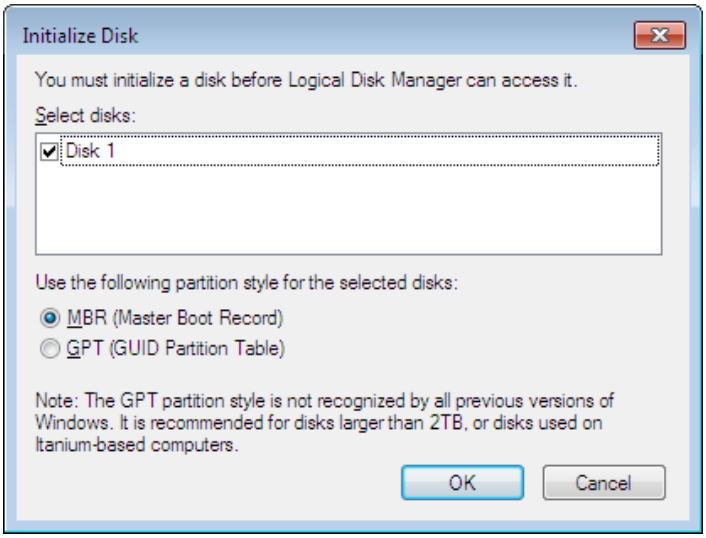
   The Computer Management window opens.

3. Click **Disk Management** under **Storage**.
4. Right-click **Not initialized** disk (DISK1), then select **Initialize Disk:**



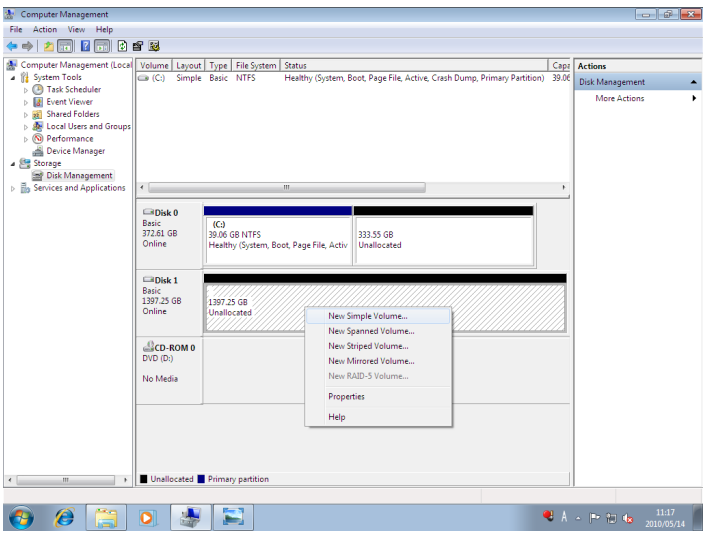
   The Initialize Disk window opens.

5. Select the disk to be initialized and click **OK** to move on to the formatting.

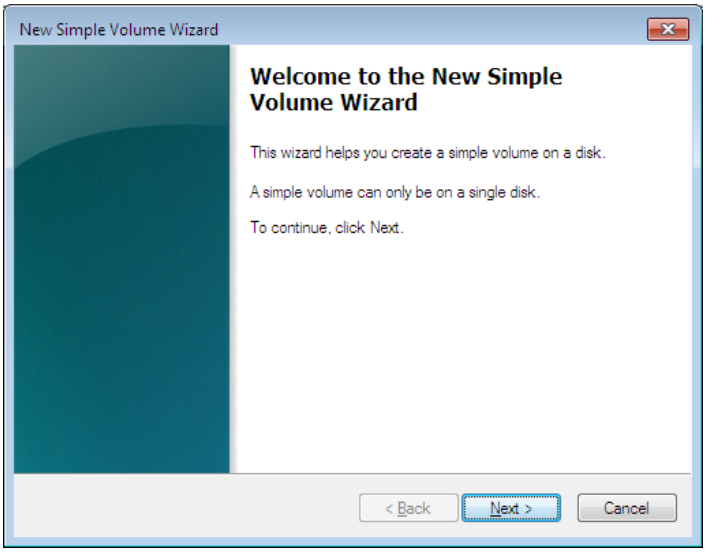

Initialize Disk
You must initialize a disk before Logical Disk Manager can access it.
Select disks:
Disk 1
Use the following partition style for the selected disks:
MBR (Master Boot Record)
GPT (GUID Partition Table)
Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.
OK
Cancel

Note
If XFly2 has capacity over 2TB in Volume then choose GPT Disk label here to able to use disk over 2TB.

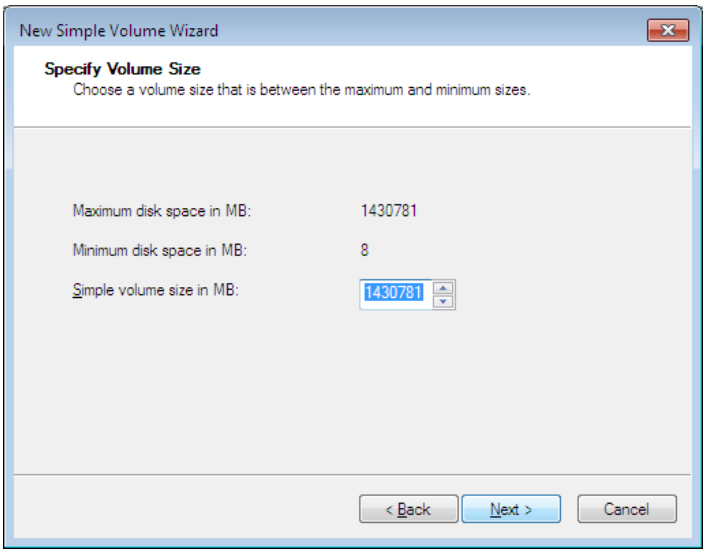
6. From the Computer Management window, right-click the disk you wish to edit and select **New Simple Volume**.



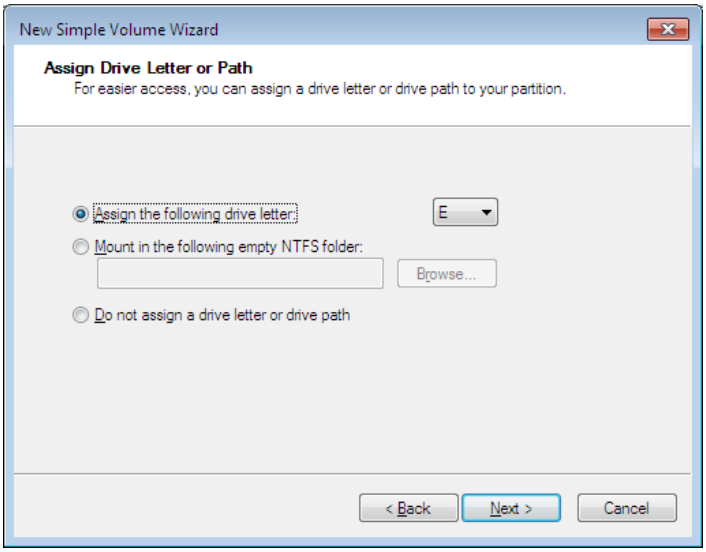
7. From the New Volume Wizard, click **Next**.


New Simple Volume Wizard
Welcome to the New Simple Volume Wizard
This wizard helps you create a simple volume on a disk.
A simple volume can only be on a single disk.
To continue, click Next.
< Back
Next >
Cancel

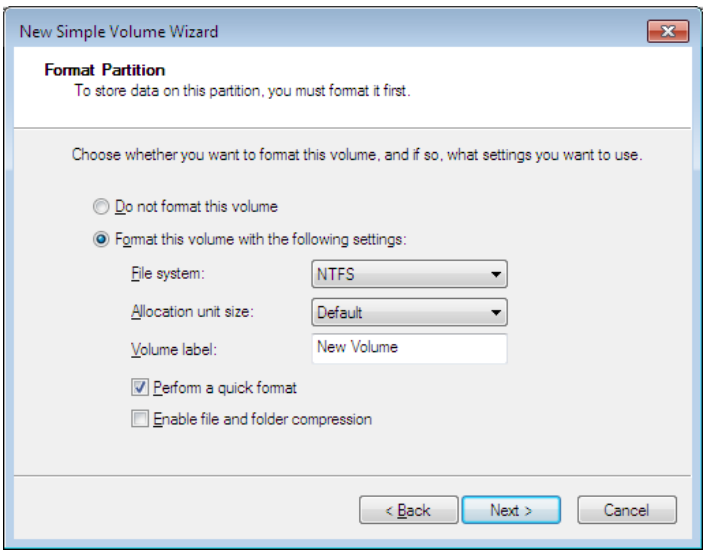
8. From the Specify Volume Size window, choose the volume you want, then click **Next**.



9. From the Assign Drive Letter or Path window, choose the drive letter you wish, then click **Next**.

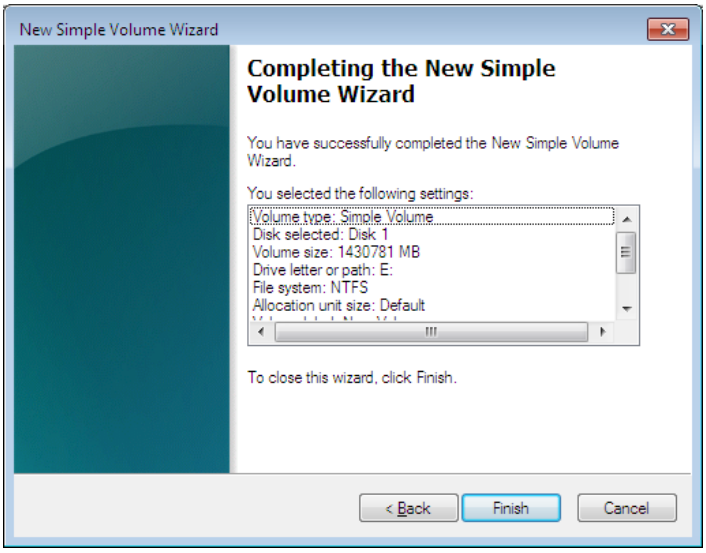

New Simple Volume Wizard
Assign Drive Letter or Path
For easier access, you can assign a drive letter or drive path to your partition.
Assign the following drive letter:
E
Mount in the following empty NTFS folder:
Browse...
Do not assign a drive letter or drive path
< Back
Next >
Cancel

10. From the Format Partition window, choose the proper formatting settings, then click **Next**.


New Simple Volume Wizard
Format Partition
To store data on this partition, you must format it first.
Choose whether you want to format this volume, and if so, what settings you want to use.
Do not format this volume
Format this volume with the following settings:
File system:
NTFS
Allocation unit size:
Default
Volume label:
New Volume
Perform a quick format
Enable file and folder compression
< Back
Next >
Cancel

Note
It is recommended to change Allocation Unit Size from **Default** to **64K** for better performance.

11. Check the Settings and click **Finish**.


New Simple Volume Wizard
Completing the New Simple Volume Wizard
You have successfully completed the New Simple Volume Wizard.
You selected the following settings:
Volume type: Simple Volume
Disk selected: Disk 1
Volume size: 1430781 MB
Drive letter or path: E:
File system: NTFS
Allocation unit size: Default
To close this wizard, click Finish.
< Back
Finish
Cancel

The format will begin.

Close the Computer Management window as soon as the format is completed.

Then you can use the disk.

3.3. Other Operating Systems

Please refer to the user manual of associated vendors.

Appendix A - MBR of Different Operating Systems

Since first LBA of LUN partition is not always aligned with data buffer size, an unaligned LUN might impact the performance of data access. Especially this happens on earlier Windows Operating Systems. In LUN MODE setup parameter, there are different offset options to adjust the alignment at LUN creation.

Please refer to the table below for different combinations.

OS	MBR		GPT		Note
	First LBA	Alignment	First LBA	Alignment	
Win7x64	206848	√	264192	√	-
Win7x86	206848	√	264192	√	-
WS2008R2	206848	√	264192	√	-
VistaSP1x86	2048	√	264192	√	-
VistaSP1x64	2048	√	264192	√	-
WS2008x86	2048	√	264192	√	-
WS2008x64	2048	√	264192	√	-
WS2003R2x86	63	X	262178	X	MBR: MBR(+1) GPT: MBR(-2)
WS2003R2x64	63	X	262178	X	MBR: MBR(+1) GPT: MBR(-2)
WinXPx86	63	X	N/A	X	MBR: MBR(+1)
WinXPx64	63	X	262178	X	MBR: MBR(+1) GPT: MBR(-2)

√: Aligned

X: Needs alignment

Appendix B - Error Messages Shown on LCD

Category	LCD Text	Meaning	Notes
Drive Error	RAID-x ONE DRIVE DOWN	One drive down and host accessible status	To know exactly which drive is down, find the Drive Faulty LED on the system front panel. Press **SELECT** can also show which drive is down.
	RAID-5 TWO DRIVE DOWN	Two drives down and host accessible status	Same as above.
	SYSTEM DOWN	System not reliable anymore due to multiple drive down	Same as above. Press **MODE** to mute buzzer.
	RAID-10 MULTIPLE DOWN	Multiple drives down and host accessible status	
	Most Delay Channel X	X is empty if there is no delay channel	
	CH x RCV in PTR yyyyyyyyyyyyyyy	Drive x is recovered by rewrite at Patrol scan on LBA yyyyyy	
Enclosure Error	FANx STOP NORMAL	Fan x stopped and host accessible	Check user manual to know which fan failed. Press **MODE** to mute buzzer.
	FANx OVERFLOW	Fan x speed is >90,000RPM	
	ALL FAN STOP NORMAL	All fans stopped and host accessible	
	PSx DOWN NORMAL	Power Supply x failed and host accessible	Only for redundant PSU
	All POWER DOWN NORMAL	All Power modules failed and host accessible	

Category	LCD Text	Meaning	Notes
Controller Error	Dispatch Nesting Error	Error occurred at starting dispatch function in dispatch routine	Host access is disconnected upon all Controller errors. Contact support for necessary actions.
	Code ROM Error System Halted	Flash EPROM check sum error System halted	Usually happened upon powering up
	Work RAM Error System Halted	Working area DRAM error System halted	
	Divide or FPP or Invalid Code Err	A zero denominator error	
	SYSTEM INTERRUPT Error	Error not defined specifically	
	SYSTEM SBI INT Occur	System break error	
	SYSTEM RIE INT：0x000	Exception error occurred on scheduled command	
	SYSTEM AE INT：0x000	Address exception error	
	SYSTEM TRAP Error	Undefined Trap process error	
Cache Memory Error	Buffer Manager Queue Error	Cache buffer manager error	Host access is disconnected upon all Cache errors. Contact support for necessary actions.
	Cache Buffer Error 0x########	Access error while cache buffer check	
	Buffer Size Error	Data inconsistent during cache buffer check	
	Buffer Manager Link Error	Cache buffer manager error	

Extra Error Codes Shown on ONE DOWN/SYSTEM DOWN (Drive Error)

Hardware Errors

Code	Meaning
r	IDE register read / write
A	disk dma time out ? no pend in exe auto
B	bad block detected
C	uncorrectable error detected
D	data transfer requested
E	IDE drive busy in start
I	ID not found
M	data address mark not found
N	Disk Time out in write sequence
O	command aborted
p	Time out to data shortage
R	IDE drive ready time out
S	unable to find track 0
T	(dummy) busy time out or so
Y	disk not present in write
Z	Not Ready in Command
z	other error
L	capacity error
W	Disk Not Ready in command begins
X	disk not present in operation without write

When **S** or **Z** or **z** is appended, there is high possibility that drive failed. Please contact technical support before taking any action.

Software Errors

Code	Meaning
U	undefined command error
E	chip busy soft error

Extra Information for Retry Detection and Drive SENSE DATA

Introduction

A Retry mark will be displayed when retry occurred.

Although XFly2 is designed to isolate a failed drive to avoid data corruption, it is necessary to check drive for permanent failure or occasional failure by several retries on Write or Read.

Related Codes

A Retry mark can be seen next to the **RAID-x Normal** display if retries occured. While controller operates in normal mode, pressing **MODE** and **SELECT** button will allow you to check and clear the retry mark.

The retry mark is shown after **NORMAL** in the following cases.

RAID-5
NORMAL [Code]

Code	Meaning
G	Host write data transmission error
P	Host bus parity error before data out process ending
Q	Host bus parity error in middle of data out process
R	Host bus parity error on data in phase
I	Sequencer interrupt on Initiator error
:	Data out transmission error detected abortion of condition check
-	Data write recovered by retry
;	Read error occurred on parity generation read operation. Recovery was taken

The retry mark is shown before **NORMAL** in the following cases.

RAID-5
[Code] NORMAL

Code	Meaning
:	Data in transmission error detected abortion of condition check
-	Data read recovered by retry
!	Data read recovered by Rewrite and Read
?	Retry on Patrol operation

Retrieving Retry Information

During READ or WRITE operations, if Retry occurs (Drive access retry), press the **SELECT** button to bring up retry details.

Read Retry in CH # Err Code = x
Write Retry in CH # Err Code = x
HRead Retry in CH # Err Code = x

refers to the drive number, from 0 to 9.

If there is a Drive down error on LCD, press **SELECT** to see extra error information.

Channel # Occur error x

refers to the drive number, from 0 to 9.

x refers to the drive fault reason.

Pressing **MODE** + **SELECT** twice will clear the retry mark but extra error information will be shown. If the same error occurred twice or more, then the drive or host is considered as problematic.

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